

DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
SUMMARY SHEET
October 11, 2007

- (x) ACTION/DECISION
() INFORMATION

I. TITLE: Proposed Amendment of Regulation 61-68, Water Classifications and Standards - Legislative Review Required

II. SUBJECT: Request Initial Approval to Publish a Notice of Proposed Regulation in the State Register to Provide Opportunity for Public Comment and to Conduct a Staff Informational Forum

III. FACTS:

1. Regulation 61-68 was promulgated pursuant to Section 48-1-10 of the 1976 Code. It establishes appropriate classified water uses to be achieved and protected, general rules and specific water quality criteria to protect classified and existing water uses of the State and to protect the public health and welfare and maintain and enhance water quality, and an antidegradation policy to protect and maintain water quality. Section 303(c)(2)(B) of the Federal Clean Water Act (CWA) requires that the Department review this regulation once every three years in order to incorporate the latest revisions to the Federal criteria and water quality standards regulation as necessary. Therefore, this review process is referred to as the "triennial review."

2. The proposed amendments of R.61-68 will strengthen and improve the existing regulation and make appropriate revisions of the State's water quality standards in accordance with Section 303(c)(2)(B) of the CWA.

3. A Notice of Drafting was published in the *State Register* on January 26, 2007, initiating the regulation development process. The Department mailed a copy of the notice to approximately 300 interested parties. In addition, the notice was placed on the Department's website and in a newspaper that provided statewide coverage. The interested parties included, but were not limited to, representatives of consumer and environmental associations; trade, industrial, agricultural, and forestry organizations; public health, scientific, and professional groups; other Federal, State and local government agencies including several from outside South Carolina; colleges and universities, some South Carolina State legislators, and members of the general public. The Department received numerous comments during the initial drafting comment period. A copy of this Notice is submitted as Attachment E.

4. The Department has met extensively with stakeholders during the development of the proposed amendments. In addition to many informal meetings, formal stakeholder meetings were conducted on March 15, 2007, May 4, 2007, June 26, 2007, and August 2, 2007. Meeting notes and responses to comments have been shared with all stakeholders throughout this process. Additionally, a webpage was developed in order for stakeholders to easily access information on the triennial review. A Summary of Comments Received and Departmental Responses is provided as Attachment G.

5. A second Notice of Drafting was published in the *State Register* on May 25, 2007, extending the comment period and providing further opportunity for public comment. The Department received numerous comments during the drafting comment period. A copy of this Notice is submitted as Attachment F.

6. A Table of Revisions and Text of the Proposed Amendment are submitted as Attachments B and C.

7. The proposed amendment was internally reviewed by appropriate Department staff for compatibility with other regulations.

8. Department staff is requesting initial approval to public notice the proposed regulation. If approval is granted, a Notice of Proposed Regulation will be published in the *State Register* on October 26, 2007; a Staff Informational Forum will be conducted on November 27, 2007; and a Public Hearing before the Board will be scheduled for January 10, 2008. A draft State Register Notice of Proposed Regulation is submitted as Attachment D.

IV. ANALYSIS: This amendment is required to comply with requirements of Section 303(c)(2)(B) of the CWA. Many of the proposed changes to the regulation are needed in order to comply with Federal requirements. In addition, the Department has made several revisions in order to strengthen and improve the existing regulation or to clarify the regulation.

A Statement of Need and Reasonableness and a Statement of Rationale is submitted as Attachment A.

V. RECOMMENDATION: Department staff recommends that the Board grant approval to publish a Notice of Proposed Regulation in the *State Register*, to provide opportunity for public comment, to conduct a Staff Informational Forum, to receive and consider comments, and allow staff to proceed with a public hearing before the Board.

Submitted by:

Submitted by:

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Attachments:

- A. Statement of Need and Reasonableness and Statement of Rationale
- B. Table of Revisions
- C. Text of Proposed Amendment of R.61-68
- D. Draft State Register Notice of Proposed Regulation
- E. State Register Notice of Drafting published on January 26, 2007
- F. State Register Notice of Drafting published on May 25, 2007
- G. Summary of Comments Received and Departmental Responses

ATTACHMENT A
STATEMENT OF NEED AND REASONABLENESS
STATEMENT OF RATIONALE
PROPOSED AMENDMENT OF R.61-68, WATER CLASSIFICATIONS AND STANDARDS
October 11, 2007

Statement of Need and Reasonableness:

The statement of need and reasonableness was determined by staff analysis pursuant to S.C. Code Section 1-23-115(C)(1)-(3) and (9)-(11):

DESCRIPTION OF REGULATION: Amendment of Regulation 61-68, Water Classifications and Standards.

Purpose: Proposed amendment of R.61-68 will clarify, strengthen, and improve the overall quality of the existing regulation and make appropriate revisions of the State's water quality standards in accordance with Section 303(c)(2)(B) of the Federal Clean Water Act (CWA).

Legal Authority: S.C. Code Sections 48-1-10 et seq., implementing the CWA.

Plan for Implementation: The proposed amendment would be incorporated within R.61-68 upon approval of the General Assembly and publication in the State Register. The proposed amendment will be implemented in the same manner in which the present regulation is implemented.

DETERMINATION OF NEED AND REASONABLENESS OF THE PROPOSED REGULATION BASED ON ALL FACTORS HEREIN AND EXPECTED BENEFIT: This amendment is required to comply with Federal requirements of Section 303(c)(2)(B) of the CWA.

- The adoption of federal toxics criteria to reflect the most current final published criteria according to Sections 304(a) and 307(a) of the CWA.

The proposed changes to R.61-68 relating to human health and aquatic life criteria are based on sound scientific principles and are required in order to comply with the goals of Section 101(a)(2) and 303(c) of the CWA for the protection and maintenance of the uses of the waters of the State. These proposed changes incorporate scientific advances in areas of cancer and non-cancer risk assessments published in EPA's latest methodology for deriving human health water quality criteria and supercede criteria for fifteen priority pollutants. The Department has also included some Maximum Contaminant Levels (MCLs) associated with the Disinfection Byproducts Rule. The Department proposes to adopt two newly published EPA aquatic life water quality criteria for non-priority pollutants and, additionally, the Department proposes to remove two minerals, manganese and iron, as non-priority pollutants due to issues with background concentrations associated with these two parameters.

- Revision of the assessment of the bacteriological indicator for protection of recreational uses and revisions to the enterococci standard and implementation.

The proposed changes reflect the assessment methodology for recreational water currently used by the Department and approved by the EPA. Additionally, the assessment of enterococci bacteria in NPDES permits will be updated to incorporate an allowable 10% exceedence of the single sample maximum. This makes the standard consistent with the fecal coliform bacteriological indicator. The 10% exceedence will only be allowed in waters that are not impaired for enterococci.

- **Inclusion of a definition of practical quantitation limit (PQL).**

South Carolina's current water quality standards do not include a definition of PQL. The Department utilizes the term PQL as it relates to water quality standards and NPDES permitting and believes that providing the definition as currently interpreted would be a beneficial and necessary inclusion for our state's water quality standards.

- **Revision of the arsenic criteria.**

The proposed changes to R.61-68 relating to human health and aquatic life criteria are reasonable because the Department reviewed the underlying scientific basis for human health protection related to the arsenic criteria and found that due to uncertainties identified in the current risk assessment and the need for additional data, the EPA has decided to reevaluate the existing recommend human health criteria for arsenic. The Department proposes to use the current Maximum Contaminant Level (MCL) value of 10 µg/L as in interim value for the protection of human health. This criterion revision is consistent with the WQS Handbook and EPA's recommended interim approach while the criterion for arsenic is being reevaluated.

- **Revisions to the regulatory language regarding NPDES permitting and protection of surface waters for drinking water purposes.**

The proposed changes to R. 61-68 relating to protection of surface waters for drinking water purposes are reasonable because the Department reviewed the current language and found it overly restrictive and burdensome to the regulated community. The Department proposes to strike the language that prohibits mixing zones in source water protection so that the NPDES permitting program may have the discretion to make appropriate mixing zone and source water protection decisions during the permitting process without contradicting language in the standards.

DETERMINATION OF COSTS AND BENEFITS: Existing staff and resources will be utilized to implement this amendment to the regulation. No additional cost will be incurred by the State if the revisions are implemented and therefore, no additional State funding is being requested.

In reviewing the potential for significant economic impact of the proposed amendment, the Department specifically evaluated situations in which costs would most likely be incurred by the regulated community. These estimates addressed the specific revisions by issue after determining those of greatest potential impact. The Department found that the overall impact to the State's political subdivisions or the regulated community as a whole was not likely to be significant in that the existing narrative standards would have incurred similar cost or the fact that the design standards required under the amendment will be substantially consistent with the current guidelines and review guidelines utilized by the Department. Further, much of the proposed amendment, for which an estimated cost may be incurred by the regulated community at the time of permit issuance, are essential and necessary to protect and maintain the existing uses supported by the water quality standards and are, therefore, beyond the scope of cost analysis in that they provide the minimum level of protection for aquatic life and human health as required by the CWA.

UNCERTAINTIES OF ESTIMATES: Minimal to moderate.

EFFECT ON ENVIRONMENT AND PUBLIC HEALTH: Implementation of this amendment will not compromise the protection of the environment or the health and safety of the citizenry of the State. The amendment will promote and protect aquatic life and human health by the regulation of pollutants into waters of the State.

DETRIMENTAL EFFECT ON THE ENVIRONMENT AND PUBLIC HEALTH IF THE REGULATION IS NOT IMPLEMENTED: Failure by the Department to incorporate appropriately protective water quality standards in the regulation that are the basis for issuance of National Pollutant Discharge Elimination System (NPDES) permits, stormwater permits, wasteload and load allocations, groundwater remediation plans, and multiple other program areas will lead to contamination of the waters of the State with detrimental effects on the health of flora and fauna in the State as well as the citizens of South Carolina.

Statement of Rationale:

The statement of rationale was determined by staff analysis pursuant to S.C. Code Section 1-23-110(A)(3)(h).

The adoption of federal toxics criteria to reflect the most current final published criteria according to Sections 304(a) and 307(a) of the CWA contained in the proposed amendment of R.61-68 are requirements of the CWA and are necessary for compliance with EPA's recommendations for the triennial review of the water quality standards to ensure consistency with the CWA. The remaining issues are Department initiated and are necessary and essential to the water quality standards program in South Carolina and to the quality of the regulation itself. The changes to the enterococci water quality standard will ensure that water quality uses are maintained while allowing for a 10 % exceedence of the single sample maximum value for waters that are not impaired for enterococci. The changes to the enterococci recreational assessment methodology reflect the methodology currently used by the Department. The changes to the source water protection language will ensure that the language in the standards does not contradict decisions made during the NPDES permitting process.

ATTACHMENT B
TABLE OF REVISIONS
PROPOSED AMENDMENT OF R.61-68, WATER CLASSIFICATIONS AND
STANDARDS
October 11, 2007

Note: The sections cited in this listing reflect the proposed sections as they are numbered in the highlight/overstrike version of the regulation.

(1): Adoption of federal toxics criteria to reflect the most current final published criteria according to Sections 304(a) and 307(a) of the Clean Water Act.

Section Citation and Explanation of Change

R.61-68 Appendix

The proposed changes to R.61-68 relating to human health and aquatic life criteria are reasonable because the stated criteria in the amendment are based on sound scientific principles and are required in order to comply with the goals of Section 101(a)(2) and 303(c) of the CWA for protection and maintenance of the uses of the waters of the State. The changes incorporate scientific advances in areas of cancer and non cancer risk assessments and the EPA's 2000 methodology for deriving human health water quality criteria and supercede criteria for the fifteen affected pollutants and inclusion of newly published aquatic life ambient water quality criteria for two non-priority pollutants. A number of the Maximum Contaminant Levels (MCLs) associated with the Disinfection Byproducts Rule have been incorporated. Additionally, the minerals manganese and iron were removed from the non-priority pollutant table due to issues with background concentrations associated with these two parameters. Further, the arsenic criterion for human health will now reflect only the MCL due to issues with the federally-derived 307(a) criterion in concurrence with EPA.

(2): Revision of the assessment of the bacteriological indicator for protection of recreational uses and revisions to the enterococci standard and implementation.

Section Citation and Explanation of Change

R.61-68.E.14.c.9.

Removed language that was disapproved by the EPA during the last regulation review. Also added language to allow NPDES permits to implement the change to the enterococci standard to allow a 10% exceedence of the single sample maximum value in waters not impaired for enterococci.

R.61-68.E.14.d.6.

Added language to reflect the assessment methodology for 303(d) listing used by the Department.

R.61-68.G.11.f.

Added language to reflect the addition of 10% exceedence of the single sample maximum for enterococci.

R.61-68.G.12.f.

Added language to reflect the addition of 10% exceedence of the single sample maximum for enterococci.

R.61-68.G.13.f.

Added language to reflect the addition of 10% exceedence of the single sample maximum for

enterococci.

(3): Inclusion of a definition of practical quantitation limit (PQL).

Section Citation and Explanation of Change

R.61-68.B.46.

Added a definition for practical quantitation limit.

(4): Revisions to the regulatory language regarding NPDES permitting and protection of surface waters for drinking water purposes.

Section Citation and Explanation of Change

R.61-68.C.10.a.

Removed language that prohibited mixing zones in source water protection areas.

(5): Stylistic changes which may include corrections for: readability, grammar, punctuation, typography, codification, references, and language style.

The regulation also includes revisions due to recodification of additional language from the proposed text changes so that every section, subsection, item, and subitem could be cited correctly.

Section Citation and Explanation of Change

R.61-68.D.4.a.

Changed number to 0.10 to comply with State law.

R.61-68.D.4.b.

Changed number to 0.10 to comply with State law.

R.61-68.E.14.

Moved language to heading of Appendix for clarity.

R.61-68.E.14.c.10

Changed language for clarity.

R.61-68.E.17.d

Changed language for clarity.

R.61-68.G.10.h

Changed language for clarity.

ATTACHMENT C
TEXT OF PROPOSED AMENDMENT OF
R.61-68, WATER CLASSIFICATIONS AND STANDARDS
October 11, 2007

LEGEND:

Added or revised text is shown by **highlight**.

Deleted text is shown by ~~strikeout~~.

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A. PURPOSE AND SCOPE.

1. These regulations, promulgated pursuant to authority in the S. C. Pollution Control Act, Section 48-1-10 et seq., 1976 Code of Laws, establish a system and rules for managing and protecting the quality of South Carolina's surface and ground water. They establish the State's official classified water uses for all waters of the State, establish general rules and specific numeric and narrative criteria for protecting classified and existing water uses, and establish procedures for classifying waters of the State. The water quality standards include the uses of the waters, the numeric and narrative criteria, and the antidegradation rules contained in this regulation.
 - a. The uses of the waters of the State are defined and described in Sections B, C, E, F, G, and H of this regulation.
 - b. Numeric criteria for aquatic life and human health are numeric values for specific parameters and pollutants or water quality levels which have been assigned for the protection of the existing and classified uses for each of the classifications in South Carolina and are listed in Section D, E, G, H, and the Appendix. Narrative criteria for aquatic life and human health are general goals and statements of attainable or attained conditions of biological integrity and water quality of the waterbody. These narrative criteria rely upon the use of standardized measures and data analyses to make qualitative determinations of the water quality and use attainment. The Department uses scientifically sound and, where applicable, EPA-approved methods in making these determinations. Narrative criteria are listed in Sections C, D, E, F, G, and H.
 - c. Antidegradation rules provide a minimum level of protection to all waters of the State and also include provisions and requirements necessary to determine when and if water quality degradation is allowed. Antidegradation rules are described in Section D of this regulation.
2. Waters which meet standards shall be maintained. Waters which do not meet standards shall be improved, wherever attainable, to achieve those standards. However, the Department cannot assure that classified waters shall at all times meet the numeric water quality standards for such uses.
3. Recognizing the technical and economic difficulty in restoring water quality, the Department shall emphasize a preventive approach in protecting waters of the State.
4. It is a goal of the Department to maintain and improve all surface waters to a level to provide for the survival and propagation of a balanced indigenous aquatic community of flora and fauna and to provide for recreation in and on the water. It is also a goal to provide, where appropriate and desirable, for drinking water after conventional treatment, shellfish harvesting, and industrial and agricultural uses.
5. It is a goal of the Department to maintain or restore ground water quality so it is suitable as a drinking water source without any treatment.

B. DEFINITIONS.

1. The definition of any word or phrase employed in this regulation shall be the same as given in the South Carolina Pollution Control Act, 48-1-10, et seq., S.C. Code of Laws, 1976, hereafter referred to as the Act. Words or phrases which are not defined in the Act are defined as follows:

2. 7Q10 means the annual minimum seven day average flow rate that occurs with an average frequency of once in ten years as published or verified by the U. S. Geological Survey (USGS) or an estimate extrapolated from published or verified USGS data.
3. Acute means a stimulus severe enough to rapidly induce an effect; in aquatic toxicity tests, an effect observed in 96 hours or less typically is considered acute. When referring to aquatic toxicology or human health, an acute effect is not always measured in terms of lethality.
4. Acute-to-chronic ratio (ACR) means the ratio of the acute toxicity of an effluent or a toxicant to its chronic toxicity. It is used as a factor for estimating chronic toxicity on the basis of acute toxicity data, or for estimating acute toxicity on the basis of chronic toxicity data.
5. Agricultural means the use of water for stock watering, irrigation, and other farm purposes.
6. Annual average flow means the annual mean flow rate of a stream at a specific point as published or verified by the U. S. Geological Survey (USGS) or an estimated annual mean flow rate extrapolated from published or verified USGS data.
7. Aquaculture means a defined managed water area which uses discharges of pollutants into that designated area for the maintenance or production of harvestable freshwater, estuarine, or marine plants or animals.
8. Aquatic farm means the cultivation, production, or marketing of domestic aquatic organisms which are any fish, aquatic invertebrates, or aquatic plants that are spawned, produced, or marketed as a cultivated crop in the waters of the State.
9. Aquatic toxicity test mean laboratory experiments that measure the biological effect (e.g., growth, survival, and reproduction) of effluents or receiving waters on aquatic organisms.
10. Aquifer means a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of ground water to wells or springs.
11. Balanced indigenous aquatic community means a natural, diverse biotic community characterized by the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species and by a lack of domination by pollutant tolerant species.
12. Best management practice (BMP) means a practice or combination of practices that are the most effective, practical ways of controlling or abating pollution from widespread or localized sources.
13. Bioaccumulation means the process by which a compound is taken up and retained by an aquatic organism, both from water and through food.
14. Bioavailability means a measure of the physiochemical access that a toxicant has to the biological processes of an organism. The less the bioavailability of a toxicant, the less its toxic effect on an organism.
15. Bioconcentration means the process by which a compound is absorbed from water through gills or epithelial tissues and is concentrated in the body.
16. Bioconcentration factor (BCF) means the ratio of a substance's concentration in tissue versus its

concentration in water, in situations where the food chain is not exposed or represents equilibrium partitioning between water and organisms.

17. Biological assessment means an evaluation of the biological condition of a waterbody using biological surveys and other direct measurements of resident biota in surface waters and sediments.
18. Biological criteria, also known as biocriteria, mean narrative expressions or numeric values of the biological characteristics of aquatic communities based on appropriate reference conditions. Biological criteria serve as an index of aquatic community health.
19. Biological monitoring, also known as biomonitoring, means a description of the living organisms in water quality surveillance used to indicate compliance with water quality standards or permit effluent limits and to document water quality trends. Methods of biological monitoring may include, but are not limited to, toxicity testing such as ambient toxicity testing, whole effluent toxicity testing, and ambient assessment of the resident biological community.
20. Chlorophyll *a* means a photosynthetic pigment present in all types of green plants. It is used as a measure of algal biomass and is an indicator of nutrient enrichment.
21. Chronic means a stimulus that lingers or continues for a relatively long period of time, often one-tenth of the life span or more. Chronic should be considered a relative term depending on the life span of an organism. The measurement of a chronic effect can be reduced growth, reduced reproduction, etc., in addition to lethality.
22. Classified uses means those uses specified in Section G for surface waters and Section H for ground waters, whether or not those uses are being attained.
23. Concentrated aquatic animal production facility means a hatchery, fish farm, or other facility related to aquatic animal production which is not located in waters of the State and is subject to a National Pollutant Discharge Elimination System (NPDES) permit.
24. Conventional treatment as applying to potable water supplies means treatment including at least flocculation, sedimentation, filtration, and disinfection.
25. Criterion continuous concentration (CCC) means the highest instream concentration of a toxicant or an effluent to which the organisms can be exposed to protect against chronic (long-term) effects. EPA derives chronic criteria from longer term (often greater than 28 days) tests that measure survival, growth, reproduction, and in some cases bioconcentration.
26. Criterion maximum concentration (CMC) means the highest instream concentration of a toxicant or an effluent to which the organisms can be exposed for a brief period of time without causing an acute effect. EPA derives acute criteria from 48 to 96 hour tests of lethality or immobilization.
27. Daily average means the average of all samples taken during any 24 hour period.
28. Deleterious substances mean those substances which in sufficient concentrations or levels have a harmful effect on classified or existing water uses.
29. Ecoregions mean areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources and are designed to serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components. The EPA has published a document that outlines the Level III ecoregions (please refer to U.S. Environmental

Protection Agency. 1999. Level III ecoregions of the continental United States (revision of Omernik, 1987). Corvallis, Oregon, U.S. E.P.A.-National Health and Environmental Effects Research Laboratory, Map M-1.) The following are South Carolina Level III ecoregions: Blue Ridge Mountains, Piedmont, Southeastern Plains, and Middle Atlantic Coastal Plains.

30. Ephemeral streams mean streams that generally have defined natural watercourses that flow only in direct response to rainfall or snowmelt and in which discrete periods of flow persist no more than 29 consecutive days per event.
31. Existing uses means those uses actually being attained in or on the water, on or after November 28, 1975, regardless of the classified uses.
32. Fishing means the taking, harvesting, or catching of finfish or crustaceans for human consumption.
33. Full pool elevation means the maximum lake level attained before water releases over a fixed weir, spillway, or other discharge structure. In larger lakes and reservoirs, the full pool elevation is the maximum level established for management.
34. Groundwater means water below the land surface in a zone of saturation.
35. Hydrograph controlled release (HCRs) means the onsite storage or holding of treated wastewater or the use of an alternative discharge option contained in Section D.2.a. of this regulation, during specified critical streamflow conditions and then discharging the treated wastewater to the stream when streamflow is sufficient to assimilate the wastewater.
36. Intermittent streams means streams that generally have defined natural watercourses which do not flow year around, but flow beyond periods of rainfall or snowmelt.
37. Lake means any water of the State that is a freshwater pond, reservoir, impoundment, or similar body of water located wholly or partially within the State.
38. LC₅₀ means the concentration of a toxicant at which lethality occurs to 50 percent of the test organisms during a specified exposure time period.
39. Mixing zone means:
 - a. For surface waters, an area where a discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented (except as defined within a Zone of initial dilution) and public health and welfare are not endangered.
 - b. For ground waters, a hydrogeologically controlled three-dimensional flow path in the subsurface which constitutes the pathway for waste constituents to migrate from a source.
40. Natural conditions mean those water quality conditions unaffected by anthropogenic sources of pollution.
41. No discharge zone (NDZ) means a waterbody (or a portion of a waterbody) so designated that no discharging Marine Sanitation Devices (MSDs) are allowed on vessels on waterbodies so designated. All vessels located on such designated waterbodies shall be equipped with MSDs which discharge to a holding tank which shall be pumped out at a designated pump-out location or shall discharge

legally outside the boundary of the United States.

42. No observed effect concentration (NOEC) means the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation and determined using hypothesis testing.
43. Nutrients mean an element or chemical essential to life including, but not limited to, nitrogen and phosphorus.
44. Organoleptic effects mean those sensory effects associated with taste and smell.
45. Outstanding recreational or ecological resource waters means waters which are of exceptional recreational or ecological importance or of unusual value. Such waters may include, but are not limited to: waters in national or state parks or wildlife refuges; waters supporting threatened or endangered species; waters under the National Wild and Scenic Rivers Act or South Carolina Scenic Rivers Act; waters known to be significant nursery areas for commercially important species or known to contain significant commercial or public shellfish resources; or waters used for or having significant value for scientific research and study.
46. Practical Quantitation Limit (PQL) means a concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. It is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specific sample weights volumes, and processing steps have been followed
467. Prohibited area means an area adjacent to point source discharges or other sources of potential contamination in shellfish growing waters where the gathering of clams, mussels, or oysters is prohibited to protect public health.
478. Primary contact recreation means any activity with the intended purpose of direct water contact by the human body to the point of complete submergence, including but not limited to swimming, water skiing, and skin diving.
489. Propagation means the continuance of species through reproduction and growth in the natural environment, as opposed to the maintenance of species by artificial culture and stocking.
4950. Public water system means any public or privately owned waterworks system which provides drinking water for human consumption, except those serving a single private residence or dwelling.
501. Recharge area means an area where an underground source of drinking water is poorly confined, is under water table conditions, and has a downward component of flow from the water table into the underground source of drinking water.
542. Secondary contact recreation means any activity occurring on or near the water which does not have an intended purpose of direct water contact by the human body to the point of complete submergence, including but not limited to fishing, boating, canoeing, and wading.
523. Shellfish mean bivalve mollusks, specifically clams, mussels, or oysters.
534. Shellfish harvesting means taking of bivalve mollusks, specifically clams, mussels, or oysters, for direct marketing or human consumption.

545. Source for drinking water supply means any source of surface water which is used for domestic consumption, or used in connection with the processing of milk, beverages, food or for other purposes which required finished water meeting regulations [40 CFR Part 141 and 40 CFR Part 143] established pursuant to the Safe Drinking Water Act (Public Law 93-523, 95-190) applicable to public water systems.
556. Tidal conditions mean conditions determined by the Department as appropriate for tidally influenced waters of the State to be analogous to the 7Q10 or the annual average flow for flowing waters of the State.
567. Tidal saltwaters means those waters whose elevation is subject to changes due to oceanic tides and which have chloride ion content in excess of 250 milligrams per liter (mg/l) (salinity = 0.48 parts per thousand).
578. Toxic wastes means those wastes or combinations of wastes including disease-causing agents which, discharge and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), physical deformations, or restrict or impair growth in such organisms or their offspring.
589. Underground source of drinking water (USDW) means an aquifer or its portion:
- a. Which supplies any public water system or individual residential well; or
 - b. Which contains a sufficient quantity of ground water to supply a public water system or individual residential well; and,
 - (1) Currently supplies drinking water for human consumption; or
 - (2) Contains water with less than ten thousand milligrams per liter total dissolved solids.
5960. Variance means a short-term exemption from meeting certain otherwise applicable water quality standards.
601. Water table means that level below the land surface at which all the voids are filled with water at a pressure equal to atmospheric.
612. Weekly average means the average of all samples taken during any consecutive seven day period.
623. Whole effluent toxicity (WET) means the aggregate toxic effect of an aqueous sample measured directly by an aquatic toxicity test.
634. Zone of initial dilution (ZID) means that minimal area of a mixing zone immediately surrounding the outfall where water quality criteria are not met, provided there is no acute toxicity to drifting organisms and public health and welfare are not endangered.

C. APPLICABILITY OF STANDARDS.

1. The water quality standards are applicable to both surface waters and ground waters.
2. Any exception specified in this regulation is to be applied exclusively to the situation for which it

was incorporated and not as a general rule applicable to all situations or waters of the State.

3. Uses in all waters shall be protected, wherever attainable, regardless of flow.

4. Flow requirements, prohibitions, and exceptions.

a. Aquatic life numeric criteria

- (1) The applicable critical flow conditions for aquatic life criteria shall be defined as 7Q10 or tidal conditions as determined by the Department. The numeric criteria of this regulation are not applicable to waters of the State when the flow rate is less than 7Q10 except as prescribed below.
- (2) The Department shall consider conditions that are comparable to or more stringent than 7Q10 where appropriate to protect classified and existing uses, such as below dams and in tidal situations. Only those situations where the use of 7Q10 flows are determined to be impracticable, inappropriate, or insufficiently protective of aquatic life uses shall be considered as a situation in which the Department may consider other flow conditions.
- (3) The Department shall use the applicable critical flow conditions for the protection and maintenance of aquatic life for, but not limited to, the following: permit issuance, wasteload allocations, load allocations, and mixing zones.

b. Human health and organoleptic numeric criteria

- (1) The applicable critical flow conditions for human health shall be defined as annual average flow for carcinogens, 7Q10 (or 30Q5 if provided by the applicant) for noncarcinogens, or tidal conditions as determined by the Department. The applicable critical flow conditions for organoleptic criteria shall be defined as annual average flow or tidal conditions as determined by the Department. The numeric criteria of this regulation are not applicable to waters of the State when the flow rate is less than the annual average flow for carcinogens or 7Q10 (or 30Q5 if provided by the applicant) for noncarcinogens, except as prescribed below.
- (2) The Department shall consider conditions that are comparable to or more stringent than annual average flow, 7Q10, or 30Q5 (if provided by the applicant) where appropriate to protect the classified and existing uses, such as below dams and in tidal situations. Only those situations where the use of annual average flow, or 7Q10, or 30Q5 (if provided by the applicant) are determined to be impracticable, inappropriate, or insufficiently protective of human health uses shall be considered as a situation in which the Department may consider other flow conditions.
- (3) The Department shall use the applicable critical flow conditions for human health and organoleptic effects for, but not limited to, the following: permit issuance, wasteload allocations, load allocations, and mixing zones.

c. As described below, the Department may also consider conditions other than 7Q10 for use with an HCR.

- (1) After a complete antidegradation review in compliance with Section D.2., an HCR for oxygen-demanding substances may be permitted by the Department for the following situations:

- i. If other flow-related effluent conditions are allowed by federal effluent guidelines as specified in 40 CFR Parts 400-499 (Chapter I, Subchapter N) and when used the numeric criteria shall not be exceeded and all water quality standards are maintained and protected;
 - ii. For industrial discharges, after application of advanced wastewater treatment, as determined by the Department, for the type of wastewater discharged;
 - iii. For other discharges, after application of advanced wastewater treatment which will be defined, for this purpose, at or below the following permit effluent limitations of $BOD_5 = 10 \text{ mg/l}$, $NH_3\text{-N} = 1 \text{ mg/l}$, and $DO = 6 \text{ mg/l}$.
 - (2) In cases where an HCR may be allowed, the permit effluent limitations for toxics will not be variable and will be based on the critical flow conditions (chemical-specific or WET).
 - (3) In cases where an HCR may be allowed, new or proposed expansions of existing permits shall require instream biological assessments and existing permits may require instream biological assessments.
5. Intermittent streams and ephemeral streams shall be considered waters of the State. The water quality standards of the class of the stream to which intermittent and ephemeral streams are tributary shall apply, disregarding any site-specific numeric criteria for the named waterbody. This does not preclude the development of site-specific numeric criteria for intermittent and ephemeral streams.
 6. The standards of adjacent waters must be maintained in basins excavated from high ground and constructed solely for berthing vessels. The standards of the adjacent waters must also be maintained with regard to impacts from created marina basins.
 7. The existing and classified uses of downstream waters shall be maintained and protected.
 8. Where surface waters are not classified by name (unlisted) in R.61-69, Classified Waters, the water quality standards of the class of the stream to which they are tributary shall apply, disregarding any site specific numeric criteria for the named waterbody. In tidal areas where an unlisted tributary flows between two differently classified waterbodies, the more stringent numeric criteria of the classified waters apply to the unlisted tributary, disregarding any site-specific numeric criteria for those waterbodies. This does not preclude the development of site-specific numeric criteria for unlisted tributaries.
 9. Because of natural conditions some surface and ground waters may have characteristics outside the standards established by this regulation. Such natural conditions do not constitute a violation of the water quality standards; however, degradation of existing water quality is prohibited unless consistent with Section D.4. of this regulation.
 10. A mixing zone for surface waters may be allowed by the Department. All water quality standards of the classification of the surface waters, including affected downstream waters, are applicable unless a mixing zone, setting forth certain conditions, is granted by the Department. When the Department grants a mixing zone, the mixing zone shall not be an area of waste treatment nor shall it interfere with or impair the existing uses of the waterbody. The size of the mixing zone shall be minimized, as determined by the Department, and shall be based upon applicable critical flow conditions. Since mixing zones are allocated impact zones where human health and aquatic life numeric criteria can be exceeded, the Department shall restrict their use. The following prohibitions and restrictions are

established in order to support these important uses of the waters of the State.

- a. In order to protect human health, mixing zones are not allowed when: they would endanger public health and welfare, ~~any portion of the mixing zone would be in a state-approved source water protection area~~, the mixing zone would adversely affect shellfish harvesting, or the mixing zone would be for bacteria (e.g. fecal coliform).
 - b. In order to protect aquatic life, mixing zones are not allowed when: a pollutant, excluding temperature or thermal, in a discharge would attract biota; the mixing zone would result in undesirable aquatic organisms or a dominance of nuisance species outside of the mixing zone; there is a reasonable expectation that a discharge would adversely affect a federally-listed endangered or threatened aquatic species, its habitat, or a proposed or designated critical habitat; the mixing zone would not allow safe passage of aquatic organisms when passage would otherwise be unobstructed; or the mixing zone would not allow for the protection and propagation of a balanced indigenous aquatic community in and on the water body.
 - c. In order to protect both human health and aquatic life, mixing zones are not allowed when: a discharge would not be predicted to or does not produce adequate mixing at the point of discharge; or a discharge would be to a waterbody where multiple discharges interact if the combined mixing zone would impair the waterbody outside the mixing zone. The Department may prohibit or limit mixing zones in waters of the State that may be considered a significant estuarine nursery habitat for resident species.
 - d. The size of the mixing zone shall be kept to a minimum and may be determined on an individual project basis considering biological, chemical, engineering, hydrological, and physical factors.
11. Mixing zones for ground waters may be allowed by the Department. In order to ensure the maintenance and protection of the uses of the waters of the State and in compliance with Section D of this regulation, any mixing zone granted by the Department shall be determined on an individual basis by the Department as prescribed below.
- a. The numeric standards for Class GB ground water, Section H.9., are applicable unless a mixing zone solely within the bounds of the property, setting forth certain conditions, is granted by the Department. Such a mixing zone shall be granted upon satisfactory demonstration to the Department that:
 - (1) Reasonable measures have been taken or binding commitments are made to minimize the addition of contaminants to ground water and/or control the migration of contaminants in ground water;
 - (2) The ground water in question is confined to a shallow geologic unit which has little or no potential of being an Underground Source of Drinking Water, and discharges or will discharge to surface waters without contravening the surface water standards set forth in this regulation;
 - (3) The contaminant(s) in question occurs within the bounds of the property, and there is minimum possibility for ground water withdrawals (present or future) to create drawdown such that contaminants would flow off-site; and
 - (4) The contaminants or combination of contaminants in question are not dangerously toxic, mobile, or persistent.

12. Site-specific numeric criteria for surface waters may be established by the Department to replace the numeric criteria of Sections E, G, and the appendix of this regulation or to add new numeric criteria not contained in this regulation. Establishment of such numeric criteria shall be subject to public participation and administrative procedures for adopting regulations. In addition, such site-specific numeric criteria shall not apply to tributary or downstream waters unless specifically described in the water classification listing R.61-69, Classified Waters.
13. In classifying and adopting standards for the waters of the State, the Department considers:
 - a. The size, depth, surface area covered, volume, flow direction, rate of flow, stream gradient and temperature of the water;
 - b. The character of the district bordering such water and its suitability for the uses and with a view to conserving it and encouraging the most appropriate use of the lands bordering on such water for residential, agricultural, industrial, or recreational purposes;
 - c. The uses which have been made, are being made, may be made or are desired to be made of such waters for transportation, domestic, and industrial consumption, irrigation, swimming, fishing, fish culture, fire prevention, sewage disposal or other uses;
 - d. The present quality of such waters; and
 - e. Information, about the four items above, from government agencies, interested groups, and the public.

D. ANTIDegradation Rules.

1. Existing water uses and the level of water quality necessary to protect these existing uses shall be maintained and protected regardless of the water classification and consistent with the policies below.
 - a. A new activity or expansion of an existing activity shall not be allowed in Class ONRW, Class ORW, or Shellfish Harvesting Waters if it would exclude, through establishment of a prohibited area, an existing shellfish harvesting or culture use. A new activity or expansion of an existing activity which will result in a prohibited area may be allowed in Class SA or Class SB waters when determined to be appropriate by the Department and would not remove or impair an existing use.
 - b. Existing uses and water quality necessary to protect these uses are presently affected or may be affected by instream modifications or water withdrawals. The stream flows necessary to protect classified and existing uses and the water quality supporting these uses shall be maintained consistent with riparian rights to reasonable use of water.
 - c. Existing or classified ground water uses and the conditions necessary to protect those uses shall be maintained and protected.
2. Where surface water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected unless the Department finds, after intergovernmental coordination and public participation, that allowing lower water quality is necessary to important economic or social development in the areas where the waters

are located. In allowing such lower water quality, water quality adequate to fully protect existing and classified uses shall be maintained. The highest statutory and regulatory requirements for all new and existing point sources shall be achieved and all cost-effective and reasonable best management practices for nonpoint source control shall be achieved within the State's statutory authority and otherwise encouraged. In order to fulfill these goals, the Department shall consider (a) and (b) below when evaluating any proposed expansion or new discharge to waters of the State that will lower water quality to a measurable effect. This includes, but is not limited to, the new or increased loading of any pollutant or pollutant parameter in the effluent regardless of whether the discharge flow changes.

- a. An alternatives analysis, conducted by the applicant, must demonstrate to the Department that none of the following applicable alternatives that would minimize or eliminate the lowering of water quality are economically and technologically reasonable:
 - (1) Water recycle or reuse,
 - (2) Use of other discharge locations,
 - (3) Connection to other wastewater treatment facilities,
 - (4) Use of land application,
 - (5) Product or raw material substitution,
 - (6) Any other treatment option or alternative.
- b. After the alternatives analysis is completed, the Department shall evaluate whether a proposed discharge that will result in the lowering of water quality of a waterbody, and for which there are no economically or technologically reasonable alternatives, is necessary for important economic or social development. For this to be accomplished, several economic and social factors must be considered. If an evaluation of the economic and social factors reveals that affordable treatment options that, combined with any alternatives, would prevent the need for the lowering of water quality, the Department shall deny the request. Conformance of the proposed discharge with the applicable §208 Areawide Water Quality Management Plans may demonstrate importance to economic and social development as well as intergovernmental coordination and public participation. Activities requiring permits or certification by the Department shall provide for public participation through the Department's existing public notification processes. Economic and social factors to be considered may include the following:
 - (1) Employment (increases, maintenance, or avoidance of reduction),
 - (2) Increased industrial production,
 - (3) Improved community tax base,
 - (4) Improved housing, and/or
 - (5) Correction of an environmental or public health problem.
3. The water quality of outstanding resource surface waters designated as Class ONRW or Class ORW shall be maintained and protected through application of the standards for these classifications as described in Section G.
4. Certain natural conditions may cause a depression of dissolved oxygen in surface waters while existing and classified uses are still maintained. The Department shall allow a dissolved oxygen depression in these naturally low dissolved oxygen waterbodies as prescribed below pursuant to the Act, Section 48-1-83, et seq., 1976 Code of Laws:
 - a. Under these conditions the quality of the surface waters shall not be cumulatively lowered more than 0.10 mg/l for dissolved oxygen from point sources and other activities, or

- b. Where natural conditions alone create dissolved oxygen concentrations less than 110 percent of the applicable water quality standard established for that waterbody, the minimum acceptable concentration is 90 percent of the natural condition. Under these circumstances, an anthropogenic dissolved oxygen depression greater than 0.10 mg/l shall not be allowed unless it is demonstrated that resident aquatic species shall not be adversely affected. The Department may modify permit conditions to require appropriate instream biological monitoring.
- c. The dissolved oxygen concentrations shall not be cumulatively lowered more than the deficit described above utilizing a daily average unless it can be demonstrated that resident aquatic species shall not be adversely affected by an alternate averaging period.

E. GENERAL RULES AND STANDARDS APPLICABLE TO ALL WATERS.

1. The General Assembly of South Carolina in the Act has declared the following policy: "It is declared to be the public policy of the State to maintain reasonable standards of purity of the air and water resources of the State, consistent with the public health, safety and welfare of its citizens, maximum employment, the industrial development of the State, the propagation and protection of terrestrial and marine fauna and flora, and the protection of physical property and other resources. It is further declared that to secure these purposes and the enforcement of the provisions of this Act, the Department of Health and Environmental Control shall have authority to abate, control and prevent pollution."
2. The classes and standards described in Section G and H of this regulation implement the above State policy by protecting the waters of South Carolina. Consistent with the above policy, the Department adopts the following general standards in items 3-17 for all waters of South Carolina.
3. No waters of the State shall be used for the sole or principal purpose of transporting or treating wastes.
4.
 - a. Any discharge into waters of the State must be permitted by the Department and receive a degree of treatment and/or control which shall produce an effluent which is consistent with the Act, the Clean Water Act (P.L. 92-500, 95-217, 97-117, 100-4), this regulation, and related regulations. No permit issued by the Department shall be interpreted as creating any vested right in any person. Additionally, any discharge into waters of the State containing sanitary wastes shall be effectively disinfected as necessary to meet the appropriate standards of this regulation. The Department may require best management practices (BMPs) for control of stormwater runoff as part of the requirements of an NPDES permit, a State construction permit, or a State 401 Water Quality Certification.
 - b. When not specifically covered by permit reporting requirements, any unauthorized discharge into waters of the State which may cause or contribute to an excursion of a water quality standard must be reported by the responsible party to the Department orally within 24 hours of becoming aware of such conditions. Further, written notification must be provided to the Department (Compliance Assurance Division, Bureau of Water) within five (5) days of becoming aware of such conditions and the written notice must include the following:
 - (1) A description of the discharge and cause;
 - (2) The duration of the discharge, including exact dates and times, and if not corrected, the time that the unauthorized discharge is expected to cease, and what steps are being taken to eliminate, minimize, and prevent recurrence of the discharge.

5. All ground waters and surface waters of the State shall at all times, regardless of flow, be free from:
 - a. Sewage, industrial waste, or other waste that will settle to form sludge deposits that are unsightly, putrescent, or odorous to such degree as to create a nuisance, or interfere with classified water uses or existing water uses;
 - b. Floating debris, oil, grease, scum, and other floating material attributable to sewage, industrial waste, or other waste in amounts sufficient to be unsightly to such a degree as to create a nuisance or interfere with classified water uses or existing water uses;
 - c. Sewage, industrial, or other waste which produce taste or odor or change the existing color or physical, chemical, or biological conditions in the receiving waters or aquifers to such a degree as to create a nuisance, or interfere with classified water uses (except classified uses within mixing zones as described in this regulation) or existing water uses; and,
 - d. High temperature, toxic, corrosive, or deleterious substances attributable to sewage, industrial waste, or other waste in concentrations or combinations which interfere with classified water uses (except classified uses within mixing zones as described in this regulation), existing water uses, or which are harmful to human, animal, plant or aquatic life.
6. Waters where classified uses are not being attained can be reclassified for protection of an attainable use and standards designated for that use where:
 - a. Natural conditions prevent the attainment of the use; or
 - b. Natural, ephemeral, intermittent, low flow conditions, or water levels prevent the attainment of the use; or
 - c. Human caused conditions or sources prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or
 - d. Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use; or
 - e. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, preclude attainment of aquatic life protection uses; or
 - f. Controls more stringent than those required by Sections 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact.
7. Before the Department may grant a variance for any water of the State, there must be a demonstration that one of the following factors for reclassifying uses has been satisfied:
 - a. Natural conditions prevent the attainment of the use; or
 - b. Natural, ephemeral, intermittent, low flow conditions, or water levels prevent the attainment of the use; or
 - c. Human caused conditions or sources prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

- d. Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use; or
 - e. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, preclude attainment of aquatic life protection uses; or
 - f. Controls more stringent than those required by Sections 301(b) and 306 of the Clean Water Act would result in adverse social and economic impact, disproportionate to the benefits to the public health, safety or welfare as a result of maintaining the standard.
8. If the demonstration necessary under Section E.7 above has been satisfied, the Department may then grant a variance provided the following apply:
- a. The variance is granted to an individual discharger for a specific pollutant(s) or parameter(s) and does not otherwise modify water quality standards; and
 - b. The variance identifies and justifies the criterion that shall apply during the existence of the variance; and
 - c. The variance is established as close to the underlying criterion as is possible and upon expiration of the variance, the underlying criterion shall become the effective water quality standard for the waterbody; and
 - d. The variance is reviewed every three years, at a minimum, and extended only where the conditions for granting the variance still apply; and
 - e. The variance does not exempt the discharger from compliance with any applicable technology or other water quality-based permit effluent limitations; and
 - f. The variance does not affect permit effluent limitations for other dischargers.
9. Prior to removing any uses or granting a variance, notice and an opportunity for a public hearing shall be provided.
10. Discharge of fill into waters of the State is not allowed unless the activity is consistent with Department regulations and will result in enhancement of classified uses with no significant degradation to the aquatic ecosystem or water quality.
11. In order to protect and maintain lakes and other waters of the State, consideration needs to be given to the control of nutrients reaching the waters of the State. Therefore, the Department shall control nutrients as prescribed below.
- a. Discharges of nutrients from all sources, including point and nonpoint, to waters of the State shall be prohibited or limited if the discharge would result in or if the waters experience growths of microscopic or macroscopic vegetation such that the water quality standards would be violated or the existing or classified uses of the waters would be impaired. Loading of nutrients shall be addressed on an individual basis as necessary to ensure compliance with the narrative and numeric criteria.
 - b. Numeric nutrient criteria for lakes are based on an ecoregional approach which takes into

account the geographic location of the lakes within the State and are listed below. These numeric criteria are applicable to lakes of 40 acres or more. Lakes of less than 40 acres will continue to be protected by the narrative criteria.

- (1) For the Blue Ridge Mountains ecoregion of the State, total phosphorus shall not exceed 0.02 mg/l, chlorophyll *a* shall not exceed 10 ug/l, and total nitrogen shall not exceed 0.35 mg/l.
 - (2) For the Piedmont and Southeastern Plains ecoregions of the State, total phosphorus shall not exceed 0.06 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l.
 - (3) For the Middle Atlantic Coastal Plains ecoregion of the State, total phosphorus shall not exceed 0.09 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l.
 - c. In evaluating the effects of nutrients upon the quality of lakes and other waters of the State, the Department may consider, but not be limited to, such factors as the hydrology and morphometry of the waterbody, the existing and projected trophic state, characteristics of the loadings, and other control mechanisms in order to protect the existing and classified uses of the waters.
 - d. The Department shall take appropriate action, to include, but not limited to: establishing numeric effluent limitations in permits, establishing Total Maximum Daily Loads, establishing waste load allocations, and establishing load allocations for nutrients to ensure that the lakes attain and maintain the above narrative and numeric criteria and other applicable water quality standards.
 - e. The criteria specific to lakes shall be applicable to all portions of the lake. For this purpose, the Department shall define the applicable area to be that area covered when measured at full pool elevation.
- 12.
- a. The water temperature of all Freshwaters which are free flowing shall not be increased more than 5°F (2.8°C) above natural temperature conditions and shall not exceed a maximum of 90°F (32.2°C) as a result of the discharge of heated liquids unless a different site-specific temperature standard as provided for in C.12. has been established, a mixing zone as provided in C.10. has been established, or a Section 316(a) determination under the Federal Clean Water Act has been completed.
 - b. The weekly average water temperature of all Shellfish Harvesting, Class SA and Class SB waters shall not exceed 4°F (2.2°C) above natural conditions during the fall, winter or spring, and shall not exceed 1.5°F (0.8°C) above natural conditions during the summer as a result of the discharge of heated liquids unless a different site-specific temperature standard as provided for in C.12. has been established, a mixing zone as provided for in C.10. has been established, or a Section 316(a) determination under the Federal Clean Water Act has been completed.
 - c. The weekly average water temperature of all Freshwaters which are lakes shall not be increased more than 5°F (2.8°C) above natural conditions and shall not exceed 90°F (32.2°C) as a result of the discharge of heated liquids unless a different site-specific temperature standard as provided for in C.12. has been established, a mixing zone as provided in C.10. has been established, or a Section 316(a) determination under the Federal Clean Water Act has

been completed.

13. Numeric criteria based on organoleptic data (prevention of undesirable taste and odor) are adopted herein. Those substances and their criteria are listed in the appendix. For those substances which have aquatic life and/or human health numeric criteria and organoleptic numeric criteria, the most stringent of the three shall be used for derivation of permit effluent limitations.
14. Numeric criteria for the protection and maintenance of all classes of surface waters are adopted herein and are listed in Sections E, G, and the appendix. ~~The numeric criteria developed and published by EPA are hereby incorporated into this regulation.~~ Footnotes that further describe the application of these numeric criteria are included in the appendix.
 - a. Application of numeric criteria to protect aquatic life.
 - (1) The stated CMC value shall be used as an acute toxicity number for calculating permit effluent limitations.
 - (2) The stated CCC value shall be used as a chronic toxicity number for calculating permit effluent limitations.
 - (3) If metals concentrations for numeric criteria are hardness-dependent, the CMC and CCC concentrations shall be based on 25 milligrams/liter (mg/l) hardness (as expressed as CaCO_3) if the ambient hardness is less than 25 mg/l. Concentrations of hardness less than 400 mg/l maybe based on the actual mixed stream hardness if it is greater than 25 mg/l and less than 400 mg/l and 400 mg/l if the ambient hardness is greater than 400 mg/l.
 - (4) If separate numeric criteria are given for fresh and salt waters, they shall be applied as appropriate. In transitional tidal and estuarine areas, the Department shall apply the more stringent of the criteria to protect the existing and classified uses of the waters of the State.
 - (5) The Department shall review new or revised EPA criteria for adoption by South Carolina when published in final form.
 - (6) If the State develops site-specific criteria for any substances for which EPA has developed national criteria, the site-specific criteria shall supersede the national criteria.
 - b. Application of numeric criteria to protect human health.
 - (1) If separate numeric criteria are given for organism consumption, water and organism consumption (W/O), and drinking water Maximum Contaminant Levels (MCLs), they shall be applied as appropriate. The most stringent of the criteria shall be applied to protect the existing and classified uses of the waters of the State.
 - (2) The Department shall review new or revised EPA criteria for adoption by South Carolina when published in final form by EPA.
 - (3) If the State develops site-specific criteria for any substances for which EPA has developed national criteria, the site-specific criteria shall supersede the national

criteria.

- (4) Adoption of EPA human health criteria does not preclude the Department from considering health effects of other pollutants or from considering new or revised EPA criteria when developing effluent permit conditions.

c. Application of criteria for the derivation of permit effluent limitations.

- (1) Numeric criteria for substances listed in Sections E, G, and the appendix shall be used by the Department to derive NPDES permit effluent limitations at the applicable critical flow conditions as determined by the Department unless an exception is provided below.
- (2) When the derived permit effluent limitation based on aquatic life numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying statement in the permit that the practical quantitation limit using approved analytical methods shall be considered as being in compliance with the limit. Appropriate biological monitoring requirements shall be incorporated into the permit to determine compliance with appropriate water quality standards. Additionally, if naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation, the Department may establish permit effluent limitations at a level higher than the derived limit, but no higher than the natural background concentration. In such cases, the Department may require biological instream monitoring and/or WET testing.
- (3) When the derived permit effluent limitation based on human health numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying statement in the permit that the practical quantitation limit using approved analytical methods shall be considered as being in compliance with the limit. Additionally, if naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation, the Department may establish permit effluent limitations at a level higher than the derived limit, but no higher than the natural background concentration.
- (4) NPDES permit effluent limitations for metals shall normally be expressed on the permits as total recoverable metals, but the Department may utilize a federally-approved methodology to predict the dissolved fraction, partitioning coefficient, or the bioavailable portion of metals in calculating these limits.
- (5) Except as provided herein, where application of MCLs or W/O numeric criteria using annual average flow for carcinogens, 7Q10 (or 30Q5 if provided by the applicant) for noncarcinogens, or comparable tidal condition as determined by the Department results in permit effluent limitations more stringent than limitations derived from other applicable human health (organism consumption only), aquatic life, or organoleptic numeric values; MCLs or W/O shall be used in establishing permit effluent limitations for human health protection. The Department may, after Notice of Intent included in a notice of a proposed NPDES permit in accordance with Regulation 61-9.124.10, determine that drinking water MCLs or W/O shall not apply to discharges to those waterbodies where there is: no potential to affect an existing or proposed drinking water source and no state-approved source water protection area. For purposes of this section, a proposed drinking water source is one for which a complete permit application, including plans and specifications for the intake, is on file with the

Department at the time of consideration of an NPDES permit application. for a discharge that will affect or has the potential to affect the drinking water source.

- (6) Except as provided herein, where the Department may determine that an NPDES permitted discharge will not cause, have reasonable potential to cause, or contribute to an exceedence of the numeric criterion for turbidity under the following conditions:
 - i. The facility withdraws its surface intake water containing turbidity from the same body of water into which the discharge is made;
 - ii. The facility does not significantly concentrate or contribute additional turbidity to the discharged water;
 - iii. The facility does not alter the turbidity through chemical or physical means that would cause adverse water quality impacts to occur.
- (7) Site-specific permit effluent limitations and alternate criteria less stringent than those derived in accordance with the above requirements may be derived where it is demonstrated that such limits and criteria shall maintain the existing and classified uses, adequate opportunity for public participation in such derivation process has occurred, and the effluent shall not cause criteria for human health to be exceeded. Where a site-specific permit effluent limitation and alternate criterion has been derived, such derivation shall be subject to EPA review as appropriate. Also, at a minimum, opportunity for input in derivation of a site-specific permit effluent limitation and alternate criterion shall be provided via public notice in NPDES permit notices.
- (8) In order to protect for the consumption use of shellfish, for SFH waters and other waters with approved shellfish harvesting uses, the stated value of 14/100 ml for fecal coliform shall be used as a monthly average number for calculating permit effluent limitations and the stated value of 43/100ml for fecal coliform shall be used as daily maximum number for calculating permit effluent limitations.
- (9) In order to protect recreational uses for all waters of the State, the stated value of 200/100 ml for fecal coliform shall be used as a monthly average number for calculating permit effluent limitations and the stated value of 400/100ml for fecal coliform shall be used as daily maximum number for calculating permit effluent limitations. In order to protect recreational uses in Class SB saltwaters of the State, the stated value of 35/100 ml for enterococci shall be used as a monthly average number for permit effluent limitations and the stated value of 501/100 ml for enterococci shall be used as a daily maximum number for calculating permit effluent limitations. In order to protect recreational uses in all other saltwaters of the State, the stated value of 35/100 ml for enterococci shall be used as a monthly average number for permit effluent limitations and the stated value of 104/100 ml for enterococci shall be used as a daily maximum number for calculating permit effluent limitations. For waters impaired for enterococci the daily maximum shall be set at 501/100 ml for SB waters or 104/100 ml for all other saltwaters. ~~Implementation of the enterococci standards in NPDES permit effluent limitations shall be subsequent to EPA publishing the applicable test methods in 40 CFR 136.~~
- (10) All effluent permit limitations which include WET will require that the WET tests be conducted using *Ceriodaphnia dubia* (*C. dubia*), except as stated. If the salinity of a discharge to a saline waterbody is high enough to be toxic to *C. dubia*, *Mysidopsis bahia* (*M. bahia*) will be used. If the hardness of a waterbody is low enough to be

toxic to *C. dubia*, then *Daphnia ambigua* (*D. ambigua*) may be used. Low salinity discharges to saltwater may be tested using either *C. dubia* or *M. bahia* with salinity adjustment, as determined by the Department. The Department may consider an alternative species if it can be demonstrated that the proposed species meets the requirements of 40 CFR.136.4 and 5, **as approved by EPA**. EPA test methods (40 CFR Part 136) for acute and chronic toxicity testing with freshwater organisms or marine and estuarine organisms must be followed. **The Department may consider an alternative method if it can be demonstrated that the proposed method meets the requirements of 40 CFR.136, and is approved by EPA.** ~~Any modifications to species selection or the methodology used shall be approved by the EPA.~~

d. Evaluation of ambient water quality

- (1) If the numeric criterion for toxic pollutants is lower than the analytical detection limit, the criterion is not considered violated if the ambient concentration is below the detection limit and the instream indigenous biological community is not adversely impacted.
 - (2) If the ambient concentration is higher than the numeric criterion for toxic pollutants, the criterion is not considered violated if biological monitoring has demonstrated that the instream indigenous biological community is not adversely impacted.
 - (3) In order to appropriately evaluate the ambient water quality for the bioavailability of the dissolved portion of hardness dependent metals, the Department may utilize a federally-approved methodology to predict the dissolved fraction or partitioning coefficient in determining compliance with water quality standards established in this regulation.
 - (4) The assessment of fecal coliform for purposes of evaluating the shellfish harvesting use for South Carolina's Shellfish Management Units is conducted in accordance with provisions of S.C. Regulation 61-47, Shellfish.
 - (5) The assessment of enterococci for purposes of issuing swimming advisories for ocean beaches for recreational use will be based on the single sample maximum of 104/100 ml.
 - (6) **The assessment of enterococci for purposes of Section 303(d) listing determinations for coastal waters for recreational use will be based on the geometric mean with an allowable 10% exceedence.**
15. The Department may require biological or other monitoring in NPDES permits to further ascertain any bioaccumulative effects of pollutants. Such monitoring may include analyses of fish and shellfish, macroinvertebrates, macrophytes, and/or sediments in order to assess the accumulation of pollutants in tissues or sediments that:
- a. May cause or have the potential to cause adverse impacts to the balanced indigenous aquatic community, and
 - b. May cause or have the potential to cause adverse impacts to human health and/or terrestrial flora and fauna.
16. The Department may consider other scientifically-defensible published data which are

appropriate for use in developing permit limits and evaluating water quality for constituents for which EPA has not developed national criteria or South Carolina has no standards.

- a. The Department shall apply a sensitivity factor to aquatic toxicity data unless, in the Department's judgment, the data represent a minimum of three appropriately sensitive species representing three taxonomic groups (plant, macroinvertebrate, and fish).
 - (1) If only an acute toxicity effect concentration for a number of species for a particular pollutant is given as an LC₅₀, the lowest concentration should be divided by an acute-to-chronic ratio (ACR) of 10 and a sensitivity factor of 3.3, for an acceptable instream concentration in order to protect against chronic toxicity effects.
 - (2) If a chronic toxicity effect concentration for a number of species for a particular pollutant is given as a no observed effect concentration (NOEC), the lowest concentration should be divided by a sensitivity factor of 3.3 in order to protect against chronic toxicity to the most sensitive species.
 - b. The Department must notify the permittee that other such data were used in developing permit limits and provide justification for their use.
17. Tests or analytical methods to determine compliance or non-compliance with standards shall be made in accordance with methods and procedures approved by the Department and the EPA. In making any tests or applying analytical methods to determine compliance or non-compliance with water quality standards, representative samples shall be collected in accordance with methods and procedures approved by the Department and the EPA. Consideration of representative sample methods shall include the following:
- a. Surface water and ground water samples shall be collected so as to permit a realistic appraisal of quality and actual or potential damage to existing or classified water uses. For ground waters, consideration shall be given to, but shall not be limited to, depth to water table, flow direction, and velocity. For surface waters, time of day, flow, surface area, and depth shall be considered.
 - b. Biological assessment methods may be employed in appropriate situations to determine abnormal nutrient enrichment, trophic condition, LC₅₀, concentration of toxic substances, acceptable instream concentrations, or acceptable effluent concentrations for maintenance of a balanced indigenous aquatic community.
 - c. Temporal distribution of samples in tidally influenced waters shall cover the full range of tidal conditions.
 - d. Ambient toxicity tests used for screening purposes shall be conducted using *Ceriodaphnia dubia* (*C. dubia*), except as stated. If salinity of a waterbody is high enough to be toxic to *C. dubia*, *Mysidopsis bahia* (*M. bahia*) will be used. If the hardness of a waterbody is low enough to be toxic to *C. dubia*, then *Daphnia ambigua* (*D. ambigua*) may be used. The Department may consider an alternative species if it can be demonstrated that the proposed species meets the requirements of 40 CFR.136.4 and 5, **as approved by EPA**. EPA test methods (40 CFR Part 136) for acute and chronic toxicity testing with freshwater organisms or marine and estuarine organisms must be followed. **The Department may consider an alternative method if it can be demonstrated that the proposed method meets the requirements of 40 CFR.136, and is approved by EPA.** ~~Any modifications to species selection or the methodology used shall be approved by the EPA.~~

F. NARRATIVE BIOLOGICAL CRITERIA.

1. Narrative biological criteria are contained in this regulation and are described throughout the sections where applicable. The following are general statements regarding these narrative biological criteria.
 - a. Narrative biological criteria in Section A.4. describe the goals of the Department to maintain and improve all surface waters to a level that provides for the survival and propagation of a balanced indigenous aquatic community of fauna and flora. These narrative criteria are determined by the Department based on the condition of the waters of the State by measurements of physical, chemical, and biological characteristics of the waters according to their classified uses.
 - b. Section C.10. describes narrative biological criteria relative to surface water mixing zones and specifies requirements necessary for the protection and propagation of a balanced indigenous aquatic community.
 - c. Narrative biological criteria shall be consistent with the objective of maintaining and improving all surface waters to a level that provides for the survival and propagation of a balanced indigenous aquatic community of fauna and flora attainable in waters of the State; and in all cases shall protect against degradation of the highest existing or classified uses or biological conditions in compliance with the Antidegradation Rules contained in this regulation. Section D.1.a. describes narrative biological criteria relative to activities in Outstanding National Resource Waters, Outstanding Resource Waters and Shellfish Harvesting Waters.
 - d. In order to determine the biological quality of the waters of the State, it is necessary that the biological component be assessed by comparison to a reference condition(s) based upon similar hydrologic and watershed characteristics that represent the optimum natural condition for that system. Such reference condition(s) or reaches of waterbodies shall be those observed to support the greatest variety and abundance of aquatic life in the region as is expected to be or would be with a minimal amount of disturbance from anthropogenic sources. Impacts from urbanization and agriculture should be minimal and natural vegetation should dominate the land cover. There should also be an appropriate diversity of substrate. Reference condition(s) shall be determined by consistent sampling and reliable measures of selected indicative communities of flora and fauna as established by the Department and may be used in conjunction with acceptable physical, chemical, and microbial water quality measurements and records judged to be appropriate for this purpose. Narrative biological criteria relative to activities in all waters are described in Section E.
 - e. In the Class Descriptions, Designations, and Specific Standards for Surface Waters Section, all water use classifications protect for a balanced indigenous aquatic community of fauna and flora. In addition, Trout Natural and Trout Put, Grow, and Take classifications protect for reproducing trout populations and stocked trout populations, respectively.

G. CLASS DESCRIPTIONS, DESIGNATIONS, AND SPECIFIC STANDARDS FOR SURFACE WATERS.

1. All surface waters of the State, except as discussed in Section C., shall be identified within one of the classes described below. The Department may determine in accordance with Section 312 of the Clean Water Act that for some waterbodies (or portions of waterbodies), the designation of No Discharge Zone (NDZ) for Marine Sanitation Devices (MSDs) shall be enacted with application of

the existing classified standards of the waterbody. Those waters classified by name shall be listed in Regulation 61-69 along with the NDZ designation, if applicable.

2. Where a surface water body is tributary to waters of a higher class, the quality of the water in the tributary shall be protected to maintain the standards of the higher classified receiving water.
3. For items not listed in each class, criteria published pursuant to Sections 304(a) and 307(a) of the Federal Clean Water Act or other documents shall be used as guides to determine conditions which protect water uses. Many of these criteria are listed in the appendix to this regulation. For consideration of natural conditions, refer to Sections: C.9., D.4., E.12., E.14.c.(2), E.14.c.(3), F.4.d., G.4., G.6., and G.9. For the following numeric criteria for turbidity (with the exception of Outstanding National Resource Waters, Outstanding Resource Waters, Trout waters, and Shellfish Harvesting Waters), compliance with these turbidity criteria may be considered to be met as long as the waterbody supports a balanced indigenous aquatic community when land management activities employ Best Management Practices (BMPs). For consideration, BMPs must be in full compliance with all specifications governing the proper design, installation, operation and maintenance of such BMPs and all applicable permit conditions and requirements must be met.
4. **Outstanding National Resource Waters (ONRW)** are freshwaters or saltwaters which constitute an outstanding national recreational or ecological resource.

Quality Standards for Outstanding National Resource Waters

ITEMS

a. Color, dissolved oxygen, fecal coliform, enterococci, pH, temperature, turbidity, or other parameters.

STANDARDS

Water quality conditions shall be maintained and protected to the extent of the Department's statutory authority. Numeric and narrative criteria for Class ONRW shall be those applicable to the classification of the waterbody immediately prior to reclassification to Class ONRW, including consideration of natural conditions.

5. In order to maintain the existing quality of Class ONRW waters the following additional standards apply:

ITEMS

a. Discharge from domestic, industrial, or agricultural waste treatment facilities; aquaculture; open water dredged spoil disposal.

STANDARDS

None allowed.

b. Stormwater and other nonpoint source runoff, including that from agricultural uses, or permitted discharge from aquatic farms, concentrated aquatic animal

None allowed.

production facilities, and
uncontaminated groundwater from
mining.

c. Dumping or disposal of
garbage, cinders, ashes, oils,
sludge, or other refuse

None allowed.

d. Activities or discharges from
waste treatment facilities in
waters upstream or tributary
to ONRW waters.

Allowed if there will be no
measurable impact on the
downstream ONRW consistent
with Antidegradation Rules.

6. **Outstanding Resource Waters (ORW)** are freshwaters or saltwaters which constitute an outstanding recreational or ecological resource or those freshwaters suitable as a source for drinking water supply purposes with treatment levels specified by the Department.

Quality Standards for Outstanding Resource Waters

ITEMS

a. Color, dissolved oxygen, fecal
coliform, enterococci, pH, temperature,
turbidity, or other parameters.

STANDARDS

Water quality conditions shall be
maintained and protected to the
extent of the Department's statutory
authority. Numeric and narrative
criteria for Class ORW shall be those
applicable to the classification
of the waterbody immediately
prior to reclassification to
Class ORW, including consideration
of natural conditions.

7. In order to maintain the existing quality of Class ORW waters the following additional standards apply:

ITEMS

a. Discharge from domestic,
industrial, or agricultural waste
treatment facilities;
aquaculture; open water
dredged spoil disposal.

None allowed.

b. Stormwater and other nonpoint
source runoff, including that from
agricultural uses, or permitted
discharge from aquatic farms,
concentrated aquatic animal
production facilities, and
uncontaminated groundwater from
mining.

Allowed if water quality
necessary for existing and
classified uses shall be maintained
and protected consistent with
Antidegradation Rules.

c. Dumping or disposal of garbage, cinders, ashes, oils, sludge, or other refuse	None allowed.
d. Activities or discharges from waste treatment facilities in waters upstream or tributary to ORW waters.	Allowed if water quality necessary for existing and classified uses shall be maintained and protected consistent with Antidegradation Rules.

8. **Trout Waters.** The State recognizes three types of trout waters: Natural; Put, Grow, and Take; and Put and Take.

- a. **Natural (TN)** are freshwaters suitable for supporting reproducing trout populations and a cold water balanced indigenous aquatic community of fauna and flora. Also suitable for primary and secondary contact recreation and as a source for drinking water supply after conventional treatment in accordance with the requirements of the Department. Suitable for fishing and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. Suitable also for industrial and agricultural uses.
- b. **Put, Grow, and Take (TPGT)** are freshwaters suitable for supporting growth of stocked trout populations and a balanced indigenous aquatic community of fauna and flora. Also suitable for primary and secondary contact recreation and as a source for drinking water supply after conventional treatment in accordance with the requirements of the Department. Suitable for fishing and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. Suitable also for industrial and agricultural uses.
- c. **Put and Take (TPT)** are freshwaters suitable for primary and secondary contact recreation and as a source for drinking water supply after conventional treatment in accordance with the requirements of the Department. Suitable for fishing and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. Suitable also for industrial and agricultural uses. The standards of Freshwaters classification protect these uses.

9. The standards below protect the uses of Natural and Put, Grow, and Take trout waters.

Quality Standards for Trout Waters

ITEMS	STANDARDS
a. Garbage, cinders, ashes, oils, sludge, or other refuse.	None allowed.
b. Treated wastes, toxic wastes, deleterious substances, colored or other wastes, except those given in a. above.	None alone or in combination with other substances or wastes in sufficient amounts to be injurious to reproducing trout populations in natural waters or stocked populations in put, grow, and take waters or in any manner adversely affecting the taste, color, odor, or

	sanitary condition thereof or impairing the waters for any other best usage as determined for the specific waters which are assigned to this class.
c. Toxic pollutants listed in the appendix.	As prescribed in Section E. of this regulation.
d. Stormwater and other nonpoint source runoff, including that from agricultural uses, or permitted discharge from aquatic farms, concentrated aquatic animal production facilities, and uncontaminated groundwater from mining.	Allowed if water quality necessary for existing and classified uses shall be maintained and protected consistent with Antidegradation Rules.
e. Dissolved oxygen.	Not less than 6 mg/l.
f. Fecal coliform.	Not to exceed a geometric mean of 200/100 ml, based on five consecutive samples during any 30 day period; nor shall more than 10% of the total samples during any 30 day period exceed 400/100ml.
g. pH.	Between 6.0 and 8.0.
h. Temperature.	Not to vary from levels existing under natural conditions, unless determined that some other temperature shall protect the classified uses.
i. Turbidity.	Not to exceed 10 Nephelometric Turbidity Units (NTUs) or 10% above natural conditions, provided existing uses are maintained.
10. Freshwaters (FW) are freshwaters suitable for primary and secondary contact recreation and as a source for drinking water supply after conventional treatment in accordance with the requirements of the Department. Suitable for fishing and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. Suitable also for industrial and agricultural uses.	

Quality Standards for Freshwaters

ITEMS

STANDARDS

a. Garbage, cinders, ashes, oils, sludge, or other refuse.	None allowed.
b. Treated wastes, toxic wastes, deleterious substances, colored or other wastes except those given in (a) above.	None alone or in combination with other substances or wastes in sufficient amounts to make the waters unsafe or unsuitable for primary contact recreation or to impair the waters for any other best usage as determined for the specific waters which are assigned to this class.
c. Toxic pollutants listed in the appendix.	As prescribed in Section E of this regulation.
d. Dissolved Oxygen.	Daily average not less than 5.0 mg/l with a low of 4.0 mg/l.
e. Fecal coliform.	Not to exceed a geometric mean of 200/100 ml, based on five consecutive samples during any 30 day period; nor shall more than 10% of the total samples during a any 30 day period exceed 400/100 ml.
f. pH.	Between 6.0 and 8.5.
g. Temperature.	As prescribed in E.12. of this regulation.
h. Turbidity [‡] Except for Lakes	Not to exceed 50 NTUs provided existing uses are maintained.
[‡] Lakes only	Not to exceed 25 NTUs provided existing uses are maintained.

11. **Shellfish Harvesting Waters* (SFH)** are tidal saltwaters protected for shellfish harvesting and uses listed in Class SA and Class SB. Suitable for primary and secondary contact recreation, crabbing, and fishing. Also suitable for the survival and propagation of a balanced indigenous aquatic community of marine fauna and flora.

Quality Standards for Shellfish Harvesting Waters

ITEMS	STANDARDS
a. Garbage, cinders, ashes, oils,	None allowed.

sludge, or other refuse.

b. Treated wastes, toxic wastes, deleterious substances, colored or other wastes except those given in (a) above.

None alone or in combination with other substances or wastes in sufficient amounts to adversely affect the taste, color, odor, or sanitary condition of clams, mussels, or oysters for human consumption; or to impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

c. Toxic pollutants listed in the appendix.

As prescribed in Section E of this regulation.

d. Dissolved oxygen.

Daily average not less than 5.0 mg/l with a low of 4 mg/l.

e. Fecal coliform.

Not to exceed an MPN fecal coliform geometric mean of 14/100 ml; nor shall more than 10% of the samples exceed an MPN of 43/100 ml.

f. Enterococci.

Not to exceed a geometric mean of 35/100 ml based on at least four samples collected from a given sampling site over a 30 day period; nor shall more than 10 % of the samples exceed a single sample maximum of 104/100 ml during any 30 day period. Additionally for Beach monitoring and notification activities for CWA section 406 only, samples shall not exceed a single sample maximum of 104/100 ml/.

g. pH.

Shall not vary more than 3/10 of a pH unit above or below that of effluent-free waters in the same geological area having a similar total salinity, alkalinity and temperature, but not lower than 6.5 or above 8.5.

h. Temperature.

As prescribed in E.12. of this regulation.

i. Turbidity

Not to exceed 25 NTUs provided existing uses are maintained.

j. *The Department may designate prohibited areas where shellfish harvesting for market purposes or human consumption shall not be allowed, consistent with the Antidegradation Rule, Section D.1.a of this regulation.

12. **Class SA** are tidal saltwaters suitable for primary and secondary contact recreation, crabbing, and fishing, except harvesting of clams, mussels, or oysters for market purposes or human consumption and uses listed in Class SB. Also suitable for the survival and propagation of a balanced indigenous aquatic community of marine fauna and flora.

Quality Standards for Class SA Waters

ITEMS	STANDARDS
a. Garbage, cinders, ashes, oils, sludge, or other refuse.	None allowed.
b. Treated wastes, toxic wastes, deleterious substances, colored or other wastes except those given in a. above.	None alone in combination with other substances or wastes in sufficient amounts to make the waters unsafe or unsuitable for primary contact recreation or to impair the waters for any other best usage as determined for the specific waters which are assigned to this class.
c. Toxic pollutants listed in the appendix.	As prescribed in Section E of this regulation.
d. Dissolved Oxygen.	Daily average not less than 5.0 mg/l with a low of 4.0 mg/l
e. Fecal coliform.	Not to exceed a geometric mean of 200/100 ml, based on five consecutive samples during any 30 day period; nor shall more than 10% of the total samples during any 30 day period exceed 400/100 ml.
f. Enterococci.	Not to exceed a geometric mean of 35/100 ml based on at least four samples collected from a given sampling site over a 30 day period; nor shall more than 10 % of the samples exceed a single sample maximum of 104/100 ml during any 30 day period. Additionally for Beach monitoring and notification activities for CWA section 406 only, samples

shall not exceed a single sample maximum of 104/100 ml/.

g. pH.

Shall not vary more than one-half of a pH unit above or below that of effluent-free waters in the same geological area having a similar total salinity, alkalinity and temperature, but not lower than 6.5 or above 8.5.

h. Temperature.

As prescribed in E.12. of this regulation.

i. Turbidity

Not to exceed 25 NTUs provided existing uses are maintained.

13. **Class SB** are tidal saltwaters suitable for primary and secondary contact recreation, crabbing, and fishing, except harvesting of clams, mussels, or oysters for market purposes or human consumption. Also suitable for the survival and propagation of a balanced indigenous aquatic community of marine fauna and flora.

Quality Standards for Class SB Waters

ITEMS

STANDARDS

a. Garbage, cinders, ashes, oils, sludge, or other refuse.

None allowed.

b. Treated wastes, toxic wastes, deleterious substances, colored or other wastes except those given in a. above.

None alone or in combination with other substances or wastes in sufficient amounts to be harmful to the survival of marine fauna and flora or the culture or propagation thereof; to adversely affect the taste, color, odor, or sanitary condition of fish for human consumption; to make the waters unsafe or unsuitable for primary contact recreation; or to impair the waters for any other best usage as determined for the specific waters which are assigned to this class.

c. Toxic pollutants listed in the appendix.

As prescribed in Section E of this regulation.

d. Dissolved oxygen.

Not less than 4.0 mg/l.

e. Fecal coliform.

Not to exceed a geometric mean

	of 200/100 ml based on five consecutive samples during any 30 day period; nor shall more than 10% of the total samples examined during any 30 day period exceed 400/100 ml.
f. Enterococci.	Not to exceed a geometric mean of 35/100 ml based on at least four samples collected from a given sampling site over a 30 day period; nor shall more than 10 % of the samples exceed a single sample maximum of 501/100 ml during any 30 day period. Additionally for Beach monitoring and notification activities for CWA section 406 only, samples shall not exceed a single sample maximum of 501/100 ml/.
g. pH.	Shall not vary more than one-half of a pH unit above or below that of effluent-free waters in the same geological area having a similar total salinity, alkalinity and temperature, but not lower than 6.5 or above 8.5.
h. Temperature.	As prescribed in E.12. of this regulation.
i. Turbidity	Not to exceed 25 NTUs provided existing uses are maintained.

H. CLASS DESCRIPTIONS AND SPECIFIC STANDARDS FOR GROUND WATERS.

1. All ground waters of the State, except within mixing zones, shall be identified within one of the classes described below.
2. It is the policy of the Department to maintain the quality of ground water consistent with the highest potential uses. Most South Carolina ground water is presently suitable for drinking water without treatment and the State relies heavily upon ground water for drinking water. For this reason, all South Carolina ground water is classified Class GB effective on June 28,1985.
3. The Department recognizes that Class GB may not be suitable for some ground water. Class GA is established for exceptionally valuable ground water and Class GC is established for ground water with little potential as an underground source of drinking water.
4. In keeping with this policy the Department declares that effective June 28, 1985, all ground waters of the State shall be protected to a quality consistent with the use associated with the classes

described herein. Further, the Department may require the owner or operator of a contaminated site to restore the ground water quality to a level that maintains and supports the existing and classified uses (except classified uses within mixing zones, as described in this regulation). For purposes of this section, the term operator means any person in control of, or having responsibility for, the operation of on-site activities or property and owner means a person or a previous person who has assumed legal ownership of a property through the provisions of a contract of sale or other legally binding transfer of ownership. The term owner also means any person who owned, operated, or otherwise controlled activities at such site before the title or control of which was conveyed to a unit of State or local government due to bankruptcy, foreclosure, tax delinquency, abandonment, or similar means. However, nothing in this section shall be construed to supersede specific statutory or regulatory provision that relieves owners or operators of certain contaminated sites from liability for restoration of groundwater, including, without limitation, S.C. Code §44-2-80 (b) and (c). The term does not include a unit of State or local government which acquired ownership or control involuntarily through bankruptcy, tax delinquency, abandonment, or other circumstances in which the government involuntarily acquires title by virtue of its function as sovereign. The exclusion provided under this paragraph shall not apply to any State or local government which has caused or contributed to the release or threatened release of a contaminant from the site, and such a State or local government shall be subject to these provisions in the same manner and to the same extent, both procedurally and substantively, as any nongovernmental entity.

5. A ground water monitoring program approved by the Department may be required for any existing or proposed disposal system or other activities to determine the ground water quality affected by such systems or activities. Such monitoring program may be required through the Department's permitting and certification programs.
6. Those ground waters which are classified Class GA or Class GC after petition and proper administrative procedures other than Class GB shall be described by location and listed in Regulation 61-69.
7. **Class GA** are those ground waters that are highly vulnerable to contamination because of the hydrological characteristics of the areas under which they occur and that are also characterized by either of the following two factors:
 - a. Irreplaceable, in that no reasonable alternative source of drinking water is available to substantial populations; or
 - b. Ecologically vital, in that the ground water provides the base flow for a particularly sensitive ecological system that, if polluted, would destroy a unique habitat.
8. The standards below protect these ground waters:

**Quality Standards for
Class GA Ground Waters**

ITEMS	STANDARDS
a. Treated wastes, toxic wastes, deleterious substances, or constituents thereof.	None allowed.

9. **Class GB.** All ground waters of the State, unless classified otherwise, which meet the definition of

underground sources of drinking water (USDW) as defined in Section B.

**Quality Standards for
Class GB Ground Waters**

ITEMS	STANDARDS
a. Inorganic chemicals.	Maximum contaminant levels as set forth in R.61-58, State Primary Drinking Water Regulations.
b. Organic chemicals.	Maximum contaminant levels as set forth in R.61-58, State Primary Drinking Water Regulations.
c. Man-made radionuclides, priority pollutant volatile organic compounds, pesticides, herbicides, polychlorinated biphenyls, any other synthetic organic compounds not specified above, treated wastes, thermal wastes, deleterious substances, colored wastes or other wastes or constituents thereof.	Not to exceed concentrations or amounts such as to interfere with use, actual or intended, as determined by the Department.

10. **Class GC** are those ground waters not considered potential sources of drinking water and of limited beneficial use, i.e., ground waters that exceed a concentration of 10,000 mg/l total dissolved solids or are otherwise contaminated beyond levels that allow cleanup using methods reasonably employed in public water system treatment. These ground waters also must not migrate to Class GA or Class GB ground waters or have a discharge to surface water that could cause degradation.

**Quality Standards for
Class GC Ground Waters**

ITEMS	STANDARDS
a. Treated wastes, toxic wastes, deleterious substances, or other constituents thereof.	None which interfere with any existing use of an underground source of drinking water.

I. SEVERABILITY. Should any section, paragraph, or other part of this regulation be declared invalid for any reason, the remainder shall not be affected.

APPENDIX: WATER QUALITY NUMERIC CRITERIA FOR THE PROTECTION OF AQUATIC LIFE AND HUMAN HEALTH

This appendix contains three charts (priority pollutants, nonpriority pollutants, and organoleptic effects) of numeric criteria for the protection of human health and aquatic life. The appendix also contains three attachments which address hardness conversions and application of ammonia criteria. Footnotes specific to each chart follow the chart. General footnotes pertaining to all are at the end of the charts prior to the attachments. **The numeric criteria developed and published by EPA are hereby incorporated into this regulation.** Please refer to the text of the regulation for other general information and specifications in applying these numeric criteria.

PRIORITY TOXIC POLLUTANTS

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:			
							Water & Organism (µg/L)	Organism Only (µg/L)	MCL (µg/L)	
1	Antimony	7440360					5.6 B, ee	640 B, ee	6 ee	65FR66443 SDWA
2	Arsenic	7440382	340 A, D, K	150 A, D, K	69 A, D, Y	36 A, D, Y	0.018 C, R, ff	0.14 C, R, ff	10 C	65FR31682 57FR60848 SDWA
3	Beryllium	7440417					J, ee	J, ee	4 ee	65FR31682 SDWA
4	Cadmium	7440439	0.53 D, E, K	0.10 D, E, K	43 D, Y	9.3 D, Y	J, ee	J, ee	5 ee	65FR31682 SDWA
5a	Chromium III	16065831	580 D, E, K	28 D, E, K			J, ee	J, ee	100 Total ee	EPA820/B-96-001 65FR31682 SDWA
5b	Chromium VI	18540299	16 D, K	11 D, K	1,100 D, Y	50 D, Y	J, ee	J, ee	100 Total ee	65FR31682 SDWA
6	Copper	7440508	3.8 D, E, K, Z, II	2.9 D, E, K, Z, II	5.8 D, Z, Y, cc	3.7 D, Z, Y, cc	1,300 T, ee			65FR31682
7	Lead	7439921	14 D, E, Y	0.54 D, E, Y	220 D, Y	8.5 D, Y				65FR31682

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:			
							Water & Organism (µg/L)	Organism Only (µg/L)	MCL (µg/L)	
8	Mercury	7439976	1.6 D, K, dd	0.91 D, K, dd	2.1 D, bb, dd	1.1 D, bb, dd	0.050 B, ee	0.051 B, ee	2 ee	65FR31682 SDWA
9	Nickel	7440020	150 D, E, K	16 D, E, K	75 D, Y	8.3 D, Y	610 B, ee	4, 600 B, ee		65FR31682
10	Selenium	7782492	L, Q, S	5.0 S	290 D, aa	71 D, aa	170 Z, ee	4,200 ee	50 ee	65FR31682 65FR66443 SDWA
11	Silver	7440224	0.37 D, E, G		2.3 D, G					65FR31682
12	Thallium	7440280					1.7 B, ee	0.24 B, ee	2 ee	65FR31682 68FR75510 SDWA
13	Zinc	7440666	37 D, E, K	37 D, E, K	95 D, Y	86 D, Y	7,400 T, ee	26,000 T, ee		65FR31682 65FR66443
14	Cyanide	57125	22 K, P	5.2 K, P	1 P, Y	1 P, Y	700 B, ee, jj	140 B, H, ee, jj	200 ee	EPA820/B-96-001 57FR60848 68FR75510 SDWA
15	Asbestos	1332214							7 million fibers/L I, ee	57FR60848
16	2, 3, 7, 8-TCDD (Dioxin)	1746016						0.046 ppq O, C	30ppq O, C	State Standard SDWA
17	Acrolein	107028					190 ee	290 ee		65FR66443
18	Acrylonitrile	107131					0.051 B, C	0.25 B, C		65FR66443

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:			
							Water & Organism (µg/L)	Organism Only (µg/L)	MCL (µg/L)	
19	Benzene	71432					2.2 B, C	51 B, C	5 C	IRIS 01/19/00 65FR66443 SDWA
20	Bromate	15541454							10 C	SDWA
20-1	Bromoform	75252					4.3 B, C	140 B, C	400 80 C Total THMs	65FR66443 SDWA
22	Bromoacetic acid	79083							60 C,mm Total HAA5	SDWA
24-3	Carbon Tetrachloride	56235					0.23 B, C	1.6 B, C	5 C	65FR66443 SDWA
24	Chlorite	67481							100	SDWA
22-5	Chlorobenzene	108907					680 130 B, T, ee	21,000 1,600 B, H, T, ee	100 T, ee	65FR31682 68FR75510 SDWA
23-6	Chlorodibromomethane	124481					0.40 B, C	13 B, C	400 80 C Total THMs	65FR66443 SDWA
24-7	Chloroform	67663					5.7 B, C, hh	470 B, C, hh	400 80 C Total THMs	62FR42160 SDWA
28	Dibromoacetic acid	631641							60 C,mm Total HAA5	SDWA
29	Dichloroacetic acid	79436							60 C,mm Total HAA5	SDWA

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:			
							Water & Organism (µg/L)	Organism Only (µg/L)	MCL (µg/L)	
2530	Dichlorobromomethane	75274					0.55 B, C	17 B, C	100 80 Total THMs C	65FR66443 SDWA
2631	1, 2-Dichloroethane	107062					0.38 B, C	37 B, C	5 C	65FR66443 SDWA
2732	1, 1-Dichloroethylene	75354					0.057 330 B, C ee	3.2 7,100 B, C ee	7 C	65FR66443 68FR75510 SDWA
2833	1, 2-Dichloropropane	78875					0.50 B, C	15 B, C	5 C	65FR66443 SDWA
2934	1, 3-Dichloropropene	542756					10 0.34 B, ee	1,700 21 B, ee		57FR60848 68FR75510
305	Ethylbenzene	100414					3,100 530 B, ee	29,000 2,100 B, ee	700 ee	65FR31682 68FR75510 SDWA
346	Methyl Bromide	74839					47 B, ee	1,500 B, ee		65FR66443
327	Methylene Chloride	75092					4.6 B, C	590 B, C	5 C	65FR66443 SDWA
38	Monochloroacetic acid	79118							60 Total HAA5 C,mm	SDWA
339	1, 1, 2, 2-Tetrachloroethane	79345					0.17 B, C	4.0 B, C		65FR66443
3440	Tetrachloroethylene	127184					0.69 C	3.3 C	5 C	65FR66443 SDWA

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:			
							Water & Organism (µg/L)	Organism Only (µg/L)	MCL (µg/L)	
3541	Toluene	108883					6,800 1,300 B, ee	200,000 15,000 B, ee	1000 ee	65FR31682 68FR75510 SDWA
3642	1, 2-Trans-Dichloroethylene	156605					700 140 B, ee	140,000 10,000 B, ee	100 ee	65FR31682 68FR75510 SDWA
43	Trichloroacetic acid	79039							60 Total HAA5 C,mm	SDWA
3744	1, 1, 1-Trichloroethane	71556					J, ee	J, ee	200 ee	65FR31682 SDWA
3845	1, 1, 2-Trichloroethane	79005					0.59 B, C	16 B, C	5 C	65FR66443 SDWA
3946	Trichloroethylene	79016					2.5 C	30 C	5 C	65FR66443 SDWA
407	Vinyl Chloride	75014					2.0 C kk	530 2.4 C kk	2 C	65FR66443 68FR75510 SDWA
418	2-Chlorophenol	95578					81 B, T, ee	150 B, T, ee		65FR66443
429	2, 4-Dichlorophenol	120832					77 B, T, ee	290 B, T, ee		65FR66443
4350	2, 4-Dimethylphenol	105679					380 B, T, ee	850 B, T, ee		65FR66443
4451	2-Methyl- 4, 6-Dinitrophenol	534521					13 ee	280 ee		65FR66443

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:			
							Water & Organism (µg/L)	Organism Only (µg/L)	MCL (µg/L)	
4552	2, 4-Dinitrophenol	51285					69 B, ee	5,300 B, ee		65FR66443
4653	Pentachlorophenol	87865	19 F, K	15 F, K	13 Y	7.9 Y	0.27 B, C	3.0 B, C, H	1 C	65FR31682 65FR66443 SDWA
4754	Phenol	108952					21,000 B, T, ee	1,700,000 B, H, T, ee		65FR66443
4855	2, 4, 6-Trichlorophenol	88062					1.4 B, C, T	2.4 B, C		65FR66443
4956	Acenaphthene	83329					670 B, T, ee	990 B, T, ee		65FR66443
507	Anthracene	120127					8,300 B, ee	40,000 B, ee		65FR66443
548	Benzidine	92875					0.000086 B, C	0.00020 B, C		65FR66443
529	Benzo (a) Anthracene	56553					0.0038 B, C	0.018 B, C		65FR66443
5360	Benzo (a) Pyrene	50328					0.0038 B, C	0.018 B, C	0.2 C	65FR66443 SDWA
5461	Benzo (b) Fluoranthene	205992					0.0038 B, C	0.018 B, C		65FR66443
5562	Benzo (k) Fluoranthene	207089					0.0038 B, C	0.018 B, C		65FR66443
5663	Bis 2-Chloroethyl Ether	111444					0.030 B, C	0.53 B, C		65FR66443
5764	Bis 2-Chloroisopropyl Ether	108601					1,400 B, ee	65,000 B, ee		65FR66443

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:			
							Water & Organism (µg/L)	Organism Only (µg/L)	MCL (µg/L)	
5865	Bis 2-Ethylhexyl Phthalate (DEHP)	117817	v	v	v	v	1.2 B, C	2.2 B, C	6 C	65FR66443 SDWA
5966	Butylbenzene Phthalate	85687	ii	ii	ii	ii	1,500 B, ee	1,900 B, ee		65FR66443
607	2-Chloronaphthalene	91587					1,000 B, ee	1,600 B, ee		65FR66443
618	Chrysene	218019					0.0038 B, C	0.018 B, C		65FR66443
629	Dibenzo (a, h) Anthracene	53703					0.0038 B, C	0.018 B, C		65FR66443
6370	1, 2-Dichlorobenzene	95501					2,700 420 B, ee	17,000 1,300 B, ee	600 ee	65FR31682 68FR75510 SDWA
6471	1, 3-Dichlorobenzene	541731					320 ee	960 ee		65FR66443
6572	1, 4-Dichlorobenzene	106467					400 63 ee	2,600 190 ee	75 ee	65FR31682 68FR75510 SDWA
6673	3, 3'-Dichlorobenzidine	91941					0.021 B, C	0.028 B, C		65FR66443
6774	Diethyl Phthalate	84662	ii	ii	ii	ii	17,000 B, ee	44,000 B, ee		65FR66443
6875	Dimethyl Phthalate	13113	ii	ii	ii	ii	270,000 B, ee	1,100,000 B, ee		64FR66443
6976	Di-n-butyl Phthalate	84742	ii	ii	ii	ii	2,000 B, ee	4,500 B, ee		65FR66443

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:			
							Water & Organism (µg/L)	Organism Only (µg/L)	MCL (µg/L)	
707	2, 4-Dinitrotoluene	121142					0.11 C	3.4 C		65FR66443
748	1, 2-Diphenylhydrazine	122667					0.036 B, C	0.20 B, C		65FR66443
729	Fluoranthene	206440					130 B, ee	140 B, ee		65FR66443
7380	Fluorene	86737					1,100 B, ee	5,300 B, ee		65FR66443
7481	Hexachlorobenzene	118741					0.00028 B, C	0.00029 B, C	1 C	65FR66443 SDWA
7582	Hexachlorobutadiene	87683					0.44 B, C	18 B, C		65FR66443
7683	Hexachlorocyclopentadiene	77474					240 40 B, T, ee	17,000 1100 B, H, T, ee	50 ee	57FR60848 68FR75510 SDWA
7784	Hexachloroethane	67721					1.4 B, C	3.3 B, C		65FR66443
7885	Indeno 1, 2, 3 – (cd) Pyrene	193395					0.0038 B, C	0.018 B, C		65FR66443
7986	Isophorone	78591					35 B, C	960 B, C		65FR66443
807	Nitrobenzene	98953					17 B, ee	690 B, H, T, ee		65FR66443
818	N-Nitrosodimethylamine	62759					0.00069 B, C	3.0 B, C		65FR66443

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:			
							Water & Organism (µg/L)	Organism Only (µg/L)	MCL (µg/L)	
829	N-Nitrosodi-n-Propylamine	621647					0.0050 B, C	0.51 B, C		65FR66443
8390	N-Nitrosodiphenylamine	86306					3.3 B, C	6.0 B, C		65FR66443
8491	Pyrene	129000					830 B, ee	4,000 B, ee		65FR66443
8592	1, 2, 4-Trichlorobenzene	120821					260 35 ee	940 70 ee	70 ee	IRIS 11/01/96 68FR75510 SDWA
8693	Aldrin	309002	3.0 G, X		1.3 G, X		0.000049 B, C	0.000050 B, C		65FR31682 65FR66443
8794	alpha-BHC	319846					0.0026 B, C	0.0049 B, C		65FR66443
8895	beta-BHC	319857					0.0091 B, C	0.017 B, C		65FR66443
8996	gamma-BHC (Lindane)	58899	0.95 K		0.16 G		0.019 0.98 C ee	0.063 1.8 C ee	0.2 C	65FR31682 65FR66443 68FR75510 SDWA
907	Chlordane	57749	2.4 G	0.0043 G, X	0.09 G	0.004 G, X	0.00080 B, C	0.00081 B, C	2 C	65FR31682 65FR66443SDWA
948	4, 4'-DDT	50293	1.1 G, gg	0.001 G, X, gg	0.13 G, gg	0.001 G, X, gg	0.00022 B, C	0.00022 B, C		65FR31682 65FR66443
929	4, 4'-DDE	72559					0.00022 B, C	0.00022 B, C		65FR66443

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of: Water & Organism (µg/L) Organism Only (µg/L) MCL (µg/L)			
93 100	4, 4'-DDD	72548					0.00031 B, C	0.00031 B, C		65FR66443
94 101	Dieldrin	60571	0.24 K	0.056 K, N	0.71 G	0.0019 G, X	0.000052 B, C	0.000054 B, C		65FR31682 65FR66443
95 102	alpha-Endosulfan	959988	0.22 G, W	0.056 G, W	0.034 G, W	0.0087 G, W	62 B, ee	89 B, ee		65FR31682 65FR66443
96 103	beta-Endosulfan	33213659	0.22 G, W	0.056 G, W	0.034 G, W	0.0087 G, W	62 B, ee	89 B, ee		65FR31682 65FR66443
97 104	Endosulfan Sulfate	1031078					62 B, ee	89 B, ee		65FR31682 65FR66443
98 105	Endrin	72208	0.086 K	0.036 K, N	0.037 G	0.0023 G, X	0.76 0.059 B, ee	0.81 0.060 B, H, ee	2 ee	65FR31682 68FR75510 SDWA
99 106	Endrin Aldehyde	7421934					0.29 B, ee	0.30 B, H, ee		65FR66443
1007	Heptachlor	76448	0.52 G	0.0038 G, X	0.053 G	0.0036 G, X	0.000079 B, C	0.000079 B, C	0.4 C	65FR31682 65FR66443 SDWA
1048	Heptachlor Epoxide	1024573	0.52 G, U	0.0038 G, U, X	0.053 G, U	0.0036 G, U, X	0.000039 B, C	0.000039B, C	0.2 C	65FR31682 65FR66443 SDWA
1029	Polychlorinated Biphenyls PCBs	--		0.014 M, X		0.03 M, X	0.000064 B, C, M	0.000064 B, C, M	0.5 C	65FR31682 65FR66443 SDWA

Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/ Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of: Water & Organism (µg/L) Organism Only (µg/L) MCL (µg/L)			
103 10	Toxaphene	8001352	0.73	0.0002 X	0.21	0.0002 X	0.00028 B, C	0.00028 B, C	3 C	65FR31682 65FR66443 SDWA

Footnotes:

- A This water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic, which might imply that arsenic (III) and arsenic (V) are equally toxic to aquatic life and that their toxicities are additive. In the arsenic criteria document (EPA 440/5-84-033, January 1985), Species Mean Acute Values are given for both arsenic (III) and arsenic (V) for five species and the ratios of the SMAVs for each species range from 0.6 to 1.7. Chronic values are available for both arsenic (III) and arsenic (V) for one species; for the fathead minnow, the chronic value for arsenic (V) is 0.29 times the chronic value for arsenic (III). No data are known to be available concerning whether the toxicities of the forms of arsenic to aquatic organisms are additive.
- B This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) from the 1980 Ambient Water Quality Criteria document was retained in each case.
- C This criterion is based on carcinogenicity of 10⁻⁶ risk. As prescribed in Section E of this regulation, application of this criterion for permit effluent limitations requires the use annual average flow or comparable tidal condition as determined by the Department.
- D Freshwater and saltwater criteria for metals are expressed in terms of total recoverable metals. As allowed in Section E of this regulation, these criteria may be expressed as dissolved metal for the purposes of deriving permit effluent limitations. The dissolved metal water quality criteria value may be calculated by using these 304(a) aquatic life criteria expressed in terms of total recoverable metal, and multiplying it by a conversion factor (CF). The term "Conversion Factor" (CF) represents the conversion factor for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column. (Conversion Factors for saltwater CCCs are not currently available. Conversion factors derived for saltwater CMCs have been used for both saltwater CMCs and CCCs). See "Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria", October 1, 1993, by Martha G. Prothro, Acting Assistant Administrator for Water, available from the Water Resource center, USEPA, 401 M St., SW, mail code RC4100, Washington, DC 20460; and 40CFR§131.36(b)(1). Conversion Factors can be found in Attachment 1 – Conversion Factors for Dissolved Metals.
- E The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value given here corresponds to a hardness of 25 mg/L as expressed as CaCO₃. Criteria values for other hardness may be calculated from the following: CMC (dissolved) = exp{m_A [ln(hardness)]+ b_A} (CF), or CCC (dissolved) = exp{m_C [ln(hardness)]+ b_C} (CF) and the parameters specified in Attachment 2 – Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent. As noted in footnote D above, the values in this appendix are expressed as total recoverable, the criterion may be calculated from the following: CMC (total) = exp{m_A [ln(hardness)]+ b_A}, or CCC (total) = exp{m_C [ln(hardness)]+ b_C}.
- F Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC = exp(1.005(pH)-4.869); CCC = exp(1.005(pH)-5.134). Values displayed in table correspond to a pH of 7.8.
- G This criterion is based on 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endosulfan (EPA 440/5-80-046), Endrin (EPA 440/5-80-047), Heptachlor (440/5-80-052), Hexachlorocyclohexane (EPA 440/5-80-054), Silver (EPA 440/5-80-071). The Minimum Data Requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.
- H No criterion for protection of human health from consumption of aquatic organisms excluding water was presented in the 1980 criteria document or in the 1986 *Quality Criteria for Water*. Nevertheless, sufficient information was presented in the 1980 document to allow the calculation of a criterion, even though the results of such a calculation were not shown in the document.
- I This criterion for asbestos is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act (SDWA) and the National Primary Drinking Water Regulation (NPDWR).
- J EPA has not calculated a 304(a) human health criterion for this contaminant. The criterion is the Maximum Contaminant Level developed under the Safe Drinking Water Act (SDWA) and the National Primary Drinking Water Regulation (NPDWR).
- K This criterion is based on a 304(a) aquatic life criterion that was issued in the 1995 *Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water*, (EPA-820-B-96-001, September 1996). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the difference between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. None of the decisions concerning the derivation of this criterion were affected by any considerations that are specific to the Great Lakes.
- L The CMC = 1/[(f1/CMC1) + (f2/CMC2)] where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 µg/l and 12.82 µg/l, respectively.
- M This criterion applies to total PCBs, (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses.)

- N The derivation of the CCC for this pollutant did not consider exposure through the diet, which is probably important for aquatic life occupying upper trophic levels.
- O This state criterion is also based on a total fish consumption rate of 0.0175 kg/day.
- P This water quality criterion is expressed as μg free cyanide (as CN)/L.
- Q This value was announced (61FR58444-58449, November 14, 1996) as a proposed GLI 303 I aquatic life criterion
- ~~R This water quality criterion for arsenic refers to the inorganic form only.~~
- S This water quality criterion for selenium is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor (0.996 – CMC or 0.922 – CCC) that was used in the GLI to convert this to a value that is expressed in terms of dissolved metal.
- T The organoleptic effect criterion is more stringent than the value for priority toxic pollutants.
- U This value was derived from data for heptachlor and the criteria document provides insufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide.
- V There is a full set of aquatic life toxicity data that show that DEHP is not toxic to aquatic organisms at or below its solubility limit.
- W This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.
- X This criterion is based on a 304(a) aquatic life criterion issued in 1980 or 1986, and was issued in one of the following documents: Aldrin/Dieldrin (EPA440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Polychlorinated Biphenyls (EPA 440/5- 80-068), Toxaphene (EPA 440/5-86-006). This CCC is based on the Final Residue value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the EPA no longer uses the Final Residue value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.
- Y This water quality criterion is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following criteria documents: Arsenic (EPA 440/5-84-033), Cadmium (EPA 440/5-84-032), Chromium (EPA 440/5-84-029), Copper (EPA 440/5-84-031), Cyanide (EPA 440/5-84-028), Lead (EPA 440/5-84-027), Nickel (EPA 440/5-86-004), Pentachlorophenol (EPA 440/5-86-009), Toxaphene, (EPA 440/5-86-006), Zinc (EPA 440/5-87-003).
- Z When the concentration of dissolved organic carbon is elevated, copper is substantially less toxic and use of Water-Effect Ratios might be appropriate.
- aa The selenium criteria document (EPA 440/5-87-006, September 1987) provides that if selenium is as toxic to saltwater fishes in the field as it is to freshwater fishes in the field, the status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 $\mu\text{g/L}$ in salt water because the saltwater CCC does not take into account uptake via the food chain.
- bb This water quality criterion was derived on page 43 of the mercury criteria document (EPA 440/5-84-026, January 1985). The saltwater CCC of 0.025 $\mu\text{g/L}$ given on page 23 of the criteria document is based on the Final Residue value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the EPA no longer uses the Final Residue value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.
- cc This water quality criterion was derived in *Ambient Water Quality Criteria Saltwater Copper Addendum* (Draft, April 14, 1995) and was promulgated in the Interim Final National Toxics Rule (60FR22228-222237, May 4, 1995).
- dd This water quality criterion was derived from data for inorganic mercury (II), but is applied here to total mercury. If a substantial portion of the mercury in the water column is methylmercury, this criterion will probably be under protective. In addition, even though inorganic mercury is converted to methylmercury and methylmercury bioaccumulates to a great extent, this criterion does not account for uptake via the food chain because sufficient data were not available when the criterion was derived.
- ee This criterion is a noncarcinogen. As prescribed in Section E of this regulation, application of this criterion for determining permit effluent limitations requires the use of 7Q10 or comparable tidal condition as determined by the Department.
- ~~ff EPA is currently reassessing the criteria for arsenic.~~
- gg This criterion applies to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).
- hh Although a new RfD is available in IRIS, the surface water criteria will not be revised until the National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) is completed, since public comment on the relative source contribution (RSC) for chloroform is anticipated.
- ii Although EPA has not published a completed criteria document for phthalate, it is EPA's understanding that sufficient data exist to allow calculation of aquatic life criteria.
- jj This recommended water quality criterion is expressed as total cyanide, even though the IRIS RfD the EPA used to derive the criterion is based on free cyanide. The multiple forms of cyanide that are present in ambient water have significant differences in toxicity due to their abilities to liberate the CN-moiety. Some complex cyanides require even more extreme conditions than refluxing with sulfuric acid to liberate the CN-moiety. Thus, these complex cyanides are expected to have little or no 'bioavailability' to humans. If a substantial fraction of the cyanide present in a water body is present in a complexed form (e.g., $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$), this criterion may be overly conservative.
- kk This recommended water quality criterion was derived using the cancer slope factor of 1.4 (Linear multi-stage model (LMS) exposure from birth).
- ll Freshwater copper criteria may be calculated utilizing the procedures identified in EPA-822-R-07-001.
- mm HAA5 means five haloacetic acids (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, bromoacetic acid and dibromoacetic acid).

NON PRIORITY POLLUTANTS

Non Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:		MCL (µg/L)	
							Water & Organism (µg/L)	Organism Only (µg/L)		
1	Alachlor						2 M			SDWA
2	Ammonia	7664417	CRITERIA ARE pH AND TEMPERATURE DEPENDENT - SEE DOCUMENT FOR DETAILS C							EPA822-R99-014 EPA440/5-88-004
3	Aesthetic Qualities		NARRATIVE STATEMENT AND NUMERIC CRITERIA – SEE TEXT							Gold Book
4	Atrazine						3 M			SDWA
5	Bacteria		FOR PRIMARY CONTACT RECREATION AND SHELLFISH USES – SEE TEXT							Gold Book
6	Barium	7440393					1,000 A, L		2,000 L	Gold Book
7	Carbofuran	1563662					40 L			SDWA
8	Chlorine	7782505	19	11	13	7.5	G			Gold Book SDWA
9	Chlorophenoxy Herbicide 2, 4, 5, -TP	93721					10 A, L		50 L	Gold Book SDWA
10	Chlorophenoxy Herbicide 2, 4-D	94757					100 A, L		70 L	Gold Book SDWA
11	Chlorophyll <i>a</i>		NARRATIVE STATEMENT AND NUMERIC CRITERIA – SEE TEXT							State Standard
12	Chloropyrifos	2921882	0.083 F	0.041 F	0.011 F	0.0056 F				Gold Book

Non Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:		MCL (µg/L)	
							Water & Organism (µg/L)	Organism Only (µg/L)		
13	Color		NARRATIVE STATEMENT – SEE TEXT							State Standard
14	Dalapon	75990							200 L	SDWA
15	Demeton	8065483		0.1 E		0.1 E				Gold Book
16	1, 2-Dibromo-3-chloropropane (DBCP)	96128							0.2 M	SDWA
17	Di(2-ethylhexyl) adipate	103231							400 L	SDWA
18	Dinoseb	88857							7 L	SDWA
19	Dinitrophenols	25550587					69 L	5,300 L		65FR66443
20	Nonylphenol	1044051	28	6.6	7.0	1.7				71FR9337
201	Diquat	85007							20 L	SDWA
242	Endothall	145733							100 L	SDWA
223	Ether, Bis Chloromethyl	542881					0.00010 D, M	0.00029 D, M		65FR66443
234	Cis-1, 2-dichloroethylene	156592							70 L	SDWA
245	Ethylene dibromide								0.05 M	SDWA

Non Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:		MCL (µg/L)	
							Water & Organism (µg/L)	Organism Only (µg/L)		
256	Fluoride	7681494					4000 L			SDWA
267	Glyphosate	1071836					700 L			SDWA
278	Guthion	86500	0.01 E		0.01 E					Gold Book
289	Hexachlorocyclo-hexane-Technical	319868					0.0123 L	0.0414 L		Gold Book
29	Iron	7439896	1,000 E				300 A, L			Gold Book
30	Malathion	121755	0.1 E		0.1 E					Gold Book
31	Manganese	7439965					50 A, L, N	100 A, L		Gold Book
321	Methoxychlor	72435	0.03 E		0.03 E		100 A, L		40 L	Gold Book SDWA
332	Mirex	2385855	0.001 E		0.001 E					Gold Book
343	Nitrates	14797558					10, 000 L		10, 000 L	SDWA Gold Book
354	Nitrites	14797650					1,000 L			SDWA
365	Nitrogen, Total		NARRATIVE STATEMENT AND NUMERIC CRITERIA - SEE TEXT							State Standard

Non Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:		MCL (µg/L)	
							Water & Organism (µg/L)	Organism Only (µg/L)		
376	Nitrosamines						0.0008 L	1.24 L		Gold Book
387	Nitrosodibutylamine, N	924163					0.0063 A, M	0.22 A, M		65FR66443
398	Nitrosodiethylamine, N	55185					0.0008 A, M	1.24 A, M		Gold Book
4039	Nitrosopyrrolidine, N	930552					0.016 M	34 M		65FR66443
4440	Oil and Grease		NARRATIVE STATEMENT – SEE TEXT							Gold Book
4241	Oxamyl	23135220					200 L			SDWA
4342	Oxygen, Dissolved	7782447	WARMWATER, COLDWATER, AND EXCEPTIONS FOR NATURAL CONDITIONS - SEE TEXT K							Gold Book State Standard
43	Diazinon	333415	0.17	0.17	0.82	0.82				71FR9336
44	Parathion	56382	0.065 H	0.013 H						Gold Book
45	Pentachlorobenzene	608935					1.4 E	1.5 E		65FR66443
46	pH		SEE TEXT I							Gold Book State Standard

Non Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:		MCL (µg/L)	
							Water & Organism (µg/L)	Organism Only (µg/L)		
47	Phosphorus, Total		NARRATIVE STATEMENT AND NUMERIC CRITERIA - SEE TEXT							State Standard
48	Picloram	1918021					500 L			SDWA
49	Salinity		NARRATIVE STATEMENT - SEE TEXT							Gold Book
50	Simazine	122349					4 L			SDWA
51	Solids Suspended and Turbidity		NARRATIVE STATEMENT AND NUMERIC CRITERIA - SEE TEXT							Gold Book State Standard
52	Styrene	100425					100 L			SDWA
53	Sulfide-Hydrogen Sulfide	7783064	2.0 E		2.0 E					Gold Book
54	Tainting Substances		NARRATIVE STATEMENT - SEE TEXT							Gold Book
55	Temperature		SPECIES DEPENDENT CRITERIA - SEE TEXT J							Red Book
56	1, 2, 4, 5-Tetrachlorobenzene	95943					0.97 D 1.1 D		65FR66443	
57	Tributyltin (TBT)	688733	0.46	0.063	0.37	0.010				EPA 822-F-00-008
58	2, 4, 5-Trichlorophenol	95954					1,800 B, D 3,600 B, D		65FR66443	
59	Xylenes, Total						10, 000 L			SDWA

Non Priority Pollutant		CAS Number	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health			FR Cite/Source
			CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	For Consumption of:		MCL (µg/L)	
							Water & Organism (µg/L)	Organism Only (µg/L)		
60	Uranium						30			SDWA
61	Beta particles and photon emitters						4 Millirems/yr			SDWA
62	Gross alpha particle activity						15 picocuries per liter (pCi/l)			SDWA
63	Radium 226 and Radium 228 (combined)						5 pCi/l			SDWA

Footnotes:

- A This human health criterion is the same as originally published in the Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value is now published in the Gold Book.
- B The organoleptic effect criterion is more stringent than the value presented in the non priority pollutants table.
- C According to the procedures described in the *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, except possibly where a very sensitive species is important at a site, freshwater aquatic life should be protected if both conditions specified in Attachment 3 - Calculation of Freshwater Ammonia Criterion are satisfied.
- D This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of April 8, 1998. The fish tissue bioconcentration factor (BCF) used to derive the original criterion was retained in each case.
- E The derivation of this value is presented in the Red Book (EPA 440/9-76-023, July, 1976).
- F This value is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in the following criteria document: Chloropyrifos (EPA 440/5-86-005).
- G A more stringent Maximum Residual Disinfection Level (MRDL) has been issued by EPA under the Safe Drinking Water Act. Refer to S.C. Regulation 61-58, *State Primary Drinking Water Regulations*.
- H This value is based on a 304(a) aquatic life criterion that was issued in the *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water* (EPA-820-B-96-001). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the differences between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. No decision concerning this criterion was affected by any considerations that are specific to the Great Lakes.
- I South Carolina has established some site-specific standards for pH. These site-specific standards are listed in S.C. Regulation 61-69, *Classified Waters*.
- J U.S. EPA, 1976, *Quality Criteria for Water* 1976.

- K South Carolina has established numeric criteria in Section G for waters of the State based on the protection of warmwater and coldwater species. For the exception to be used for waters of the State that do not meet the numeric criteria established for the waterbody due to natural conditions, South Carolina has specified the allowable deficit in Section D.4. and used the following document as a source. U.S. EPA, 1986, Ambient Water Quality Criteria for Dissolved Oxygen, EPA 440/5-86-003, National Technical Information Service, Springfield, VA. South Carolina has established some site-specific standards for DO. These site-specific standards are listed in S.C. Regulation 61-69, *Classified Waters*.
- L This criterion is a noncarcinogen. As prescribed in Section E of this regulation, application of this criterion for determining permit effluent limitations requires the use of 7Q10 or comparable tidal condition as determined by the Department
- M This criterion is based on an added carcinogenicity risk. As prescribed in Section E of this regulation, application of this criterion for permit effluent limitations requires the use annual average flow or comparable tidal condition as determined by the Department.
- ~~N This criterion for manganese is not based on toxic effects, but rather is intended to minimize objectionable qualities such as laundry stains and objectionable tastes in beverages.~~

ORGANOLEPTIC EFFECTS

Pollutant		CAS Number	Organoleptic Effect Criteria ($\mu\text{g/L}$)	FR Cite/Source
1	Acenaphthene	83329	20	Gold Book
2	Chlorobenzene	108907	20	Gold Book
3	3-Chlorophenol		0.1	Gold Book
4	4-Chlorophenol	106489	0.1	Gold Book
5	2, 3-Dichlorophenol		0.04	Gold Book
6	2, 5-Dichlorophenol		0.5	Gold Book
7	2, 6-Dichlorophenol		0.2	Gold Book
8	3, 4-Dichlorophenol		0.3	Gold Book
9	2, 4, 5-Trichlorophenol	95954	1	Gold Book
10	2, 4, 6-Trichlorophenol	88062	2	Gold Book
11	2, 3, 4, 6-Tetrachlorophenol		1	Gold Book
12	2-Methyl-4-Chlorophenol		1,800	Gold Book
13	3-Methyl-4-Chlorophenol	59507	3,000	Gold Book
14	3-Methyl-6-Chlorophenol		20	Gold Book
15	2-Chlorophenol	95578	0.1	Gold Book
16	Copper	7440508	1,000	Gold Book
17	2, 4-Dichlorophenol	120832	0.3	Gold Book
18	2, 4-Dimethylphenol	105679	400	Gold Book

Pollutant		CAS Number	Organoleptic Effect Criteria ($\mu\text{g/L}$)	FR Cite/Source
19	Hexachlorocyclopentadiene	77474	1	Gold Book
20	Nitrobenzene	98953	30	Gold Book
21	Pentachlorophenol	87865	30	Gold Book
22	Phenol	108952	300	Gold Book
23	Zinc	7440666	5,000	45FR79341

Footnote:

1. These criteria are based on organoleptic (taste and odor) effects. Because of variations in chemical nomenclature systems, this listing of pollutants does not duplicate the listing in Appendix A of 40 CFR Part 423. Also listed are the Chemical Abstracts Service (CAS) registry numbers, which provide a unique identification for each chemical.

WATER QUALITY CRITERIA ADDITIONAL NOTES

1. Criteria Maximum Concentration and Criterion Continuous Concentration

The Criteria Maximum Concentration (CMC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The Criterion Continuous Concentration (CCC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. The CMC and CCC are just two of the six parts of a aquatic life criterion; the other four parts are the acute averaging period, chronic averaging period, acute frequency of allowed exceedence, and chronic frequency of allowed exceedence.

2. Criteria for Priority Pollutants, Non Priority Pollutants and Organoleptic Effects

This appendix lists all priority toxic pollutants and some nonpriority toxic pollutants, and both human health effect and organoleptic effect criteria issued pursuant to CWA §304(a), the SDWA, and the NPDWR. Blank spaces indicate that EPA has no CWA §304(a) criteria recommendations. Because of variations in chemical nomenclature systems, this listing of toxic pollutants does not duplicate the listing in Appendix A of 40CFR Part 423.

3. Human Health Risk

The human health criteria for the priority and non priority pollutants are based on carcinogenicity of 10^{-6} risk.

4. Water Quality Criteria published pursuant to Section 304(a) or Section 303(c) of the CWA

Many of the values in the appendix were published in the California Toxics Rule. Although such values were published pursuant to Section 303(c) of the CWA, they represent the EPA's most recent calculation of water quality criteria.

5. Calculation of Dissolved Metals Criteria

The 304(a) criteria for metals are shown as total recoverable metals. As allowed in Section E of this regulation, these criteria may be expressed as dissolved metals. Dissolved metals criteria may be calculated in one of two ways (please refer to Attachments). For freshwater metals criteria that are hardness-dependent, the dissolved metal criteria may be calculated using a hardness of 25 mg/l as expressed as CaCO_3 . Saltwater and freshwater metals' criteria that are not hardness-dependent are calculated by multiplying the total recoverable criteria before rounding by the appropriate conversion factors. The final metals' criteria in the table are rounded to two significant figures. Information regarding the calculation of hardness dependent conversion factors are included in the footnotes.

6. Chemical Abstract Services Number

The Chemical Abstract Services number (CAS) for each pollutant is provided (where available).

7. Gold Book Reference

The Gold Book reference listed in the appendix refers to the May 1, 1986 EPA publication EPA 440/5-86-001.

8. Federal Register Reference

The FR listed in the appendix refers to the appropriate *Federal Register* listing, and source refers to the origin of the value. Many of the numeric values contained in this appendix have been modified, revised, or altered and therefore, the source as listed may not be the same as it appears in this table. Also, South Carolina may have selected to use a different value or may have promulgated a different value in its previous iterations of this regulation, so differences from these sources should be expected.

9. Maximum Contaminant Levels

The appendix includes Maximum Contaminant Levels (MCLs) developed under the Safe Drinking Water Act (SDWA) and the National Primary Drinking Water Regulation (NPDWR).

10. Organoleptic Effects

The appendix contains 304(a) criteria for pollutants with toxicity-based criteria as well as non-toxicity based criteria. The basis for the non-toxicity based criteria are organoleptic effects

(e.g., taste and odor) which would make water and edible aquatic life unpalatable but not toxic to humans. The table includes criteria for organoleptic effects for 23 pollutants. Pollutants with organoleptic effect criteria more stringent than the criteria based on toxicity (e.g., included in both the priority and non-priority pollutant tables) are footnoted as such.

11. Category Criteria

In the 1980 criteria documents, certain water quality criteria were published for categories of pollutants rather than for individual pollutants within that category. Subsequently, in a series of separate actions, the EPA derived criteria for specific pollutants within a category. Therefore, in this appendix South Carolina is replacing criteria representing categories with individual pollutant criteria (e.g., 1, 3-dichlorobenzene, 1, 4-dichlorobenzene and 1, 2-dichlorobenzene).

12. Specific Chemical Calculations

A. Selenium

(1) Human Health

In the 1980 Selenium document, a criterion for the protection of human health from consumption of water and organisms was calculated based on a BCF of 6.0 l/kg and a maximum water-related contribution of 35 μg Se/day. Subsequently, the EPA Office of Health and Environmental Assessment issued an errata notice (February 23, 1982), revising the BCF for selenium to 4.8 L/kg. In 1988, EPA issued an addendum (ECAO-CIN-668) revising the human health criteria for selenium. Later in the final National Toxic Rule (NTR, 57 FR 60848), EPA withdrew previously published selenium human health criteria, pending EPA review of new epidemiological data.

This appendix includes human health criteria for selenium, calculated using a BCF of 4.8 L/kg along with the current IRIS RfD of 0.005 mg/kg/day. South Carolina included these water quality criteria in the appendix because the data necessary for calculating a criteria in accordance with EPA's 1980 human health methodology are available.

(2) Aquatic Life

This appendix contains aquatic life criteria for selenium that are the same as those published in the CTR. In the CTR, EPA proposed an acute criterion for selenium based on the criterion proposed for selenium in the Water Quality Guidance for the Great Lakes System (61FR584440). The GLI and CTR proposals take into account data showing that selenium's two prevalent oxidation state in water, selenite and selenate, present differing potentials for aquatic toxicity, as well as new data indication that various forms of selenium are additive. The new approach produces a different selenium acute criterion concentration, or CMC, depending upon the relative proportions of selenite, selenate, and other forms of selenium that are present. EPA is currently undertaking a reassessment of selenium, and expects the 304(a) criterion for selenium will be revised based on the final reassessment (63FR26186). However, until such time as revised water quality criteria for selenium are published by the EPA, the water quality criteria in this appendix are EPA's current 304(a) criteria.

B. Chromium (III)

The aquatic life water quality criteria for chromium (III) included in the appendix are based on the values presented in the document titled: *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water*.

C. PCBs

In this appendix, South Carolina is publishing aquatic life and human health criteria based on total PCBs rather than individual arochlors.

Attachment 1 - Conversion Factors for Dissolved Metals

Metal	Conversion Factor freshwater CMC	Conversion Factor freshwater CCC	Conversion Factor saltwater CMC	Conversion Factor saltwater CCC
Arsenic	1.000	1.000	1.000	1.000
Cadmium	$1.136672 - [(\ln \text{hardness})(0.041838)]$	$1.101672 - [(\ln \text{hardness})(0.041838)]$	0.994	0.994
Chromium III	0.316	0.860	--	--
Chromium VI	0.982	0.962	0.993	0.993
Copper	0.960	0.960	0.83	0.83
Lead	$1.46203 - [(\ln \text{hardness})(0.145712)]$	$1.46203 - [(\ln \text{hardness})(0.145712)]$	0.951	0.951
Mercury	0.85	0.85	0.85	0.85
Nickel	0.998	0.997	0.990	0.990
Selenium	--	--	0.998	0.998
Silver	0.85	--	0.85	--
Zinc	0.978	0.986	0.946	0.946

Attachment 2 - Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent

Chemical	m_A	b_A	m_C	b_C	Freshwater Conversion Factors (CF)	
					Acute	Chronic
Cadmium	1.0166	-3.924	0.7409	-4.719	$1.136672 - [\ln(\text{hardness})(0.041838)]$	$1.101672 - [\ln(\text{hardness})(0.041838)]$
Chromium III	0.8190	3.7256	0.8190	0.6848	0.316	0.860
Copper	0.9422	-1.700	0.8545	-1.702	0.960	0.960
Lead	1.273	-1.460	1.273	-4.705	$1.46203 - [\ln(\text{hardness})(0.145712)]$	$1.46203 - [\ln(\text{hardness})(0.145712)]$
Nickel	0.8460	2.255	0.8460	0.0584	0.998	0.997
Silver	1.72	-6.52	--	--	0.85	--
Zinc	0.8473	0.884	0.8473	0.884	0.978	0.986

Hardness-dependent metals criteria may be calculated from the following:

CMC (total) = $\exp\{m_A [\ln(\text{hardness})] + b_A\}$, or CCC (total) = $\exp\{m_C [\ln(\text{hardness})] + b_C\}$

CMC (dissolved) = $\exp\{m_A [\ln(\text{hardness})] + b_A\}$ (CF), or CCC (dissolved) = $\exp\{m_C [\ln(\text{hardness})] + b_C\}$ (CF).

Attachment 3 - Calculation of Freshwater Ammonia Criterion

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC calculated using the following equation:

$$CMC = \frac{0.275}{1 + 10^{7.204 - \text{pH}}} + \frac{39.0}{1 + 10^{\text{pH} - 7.204}}$$

In situations where salmonids are absent, the CMC may be calculated using the following equation:

$$CMC = \frac{0.411}{1 + 10^{7.204 - \text{pH}}} + \frac{58.4}{1 + 10^{\text{pH} - 7.204}}$$

2. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CCC calculated using the following equations:

When fish early life stages (ELS) are present:

$$CCC = \left(\frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right) \times \min(2.85, 1.45 \times 10^{0.028 \times (25 - T)})$$

When fish early life stages are absent:

$$CCC = \left(\frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right) \times 1.45 \times 10^{0.028 \times (25 - \max(T, 7))}$$

and the highest four-day average within the 30-day period does not exceed 2.5 times the CCC.

In the absence of information substantiating that ELS are absent, the ELS present equation will be used.

ATTACHMENT D
DRAFT STATE REGISTER NOTICE OF PROPOSED REGULATION
PROPOSED AMENDMENT OF R.61-68, WATER CLASSIFICATIONS AND
STANDARDS
October 11, 2004

Document No. _____
DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
CHAPTER 61

Statutory Authority: 1976 Code Section 48-1-10 et seq.

R.61-68, Water Classifications and Standards

Preamble:

The Department proposes amendment of R.61-68 to strengthen and improve the existing regulation and make appropriate revisions of the State's water quality standards in accordance with Section 303(c)(2)(B) of the Federal Clean Water Act (CWA). Section 303(c)(2)(B) requires that South Carolina's water quality standards be reviewed and revised, where necessary, at least every three years for the purposes of considering the Environmental Protection Agency's (EPA) most recently published numeric and narrative criteria and to comply with recent Federal regulatory revisions and recommendations. The Department has also included two revisions that will improve the regulation. R.61-68 also includes revisions due to recodification of additional language from the proposed text changes so that every section, subsection, item, and subitem could be cited correctly. See also the Statement of Need and Reasonableness herein. The proposed amendment will be submitted to the General Assembly for review.

The Notice of Drafting for this proposed amendment was published in the *State Register* on January 26, 2007. A second notice extending the drafting comment period was published on May 25, 2007.

Discussion of Proposed Amendments for Public Comment:

Note: The sections cited in this listing reflect the proposed sections as they are numbered in the highlight/overstrike version of the regulation.

(1): Adoption of federal toxics criteria to reflect the most current final published criteria according to Sections 304(a) and 307(a) of the Clean Water Act.

Section Citation and Explanation of Change

R.61-68 Appendix

The proposed changes to R.61-68 relating to human health and aquatic life criteria are reasonable because the stated criteria in the amendment are based on sound scientific principles and are required in order to comply with the goals of Section 101(a)(2) and 303(c) of the CWA for protection and maintenance of the uses of the waters of the State. These changes incorporate scientific advances in areas of cancer and non cancer risk assessments and the EPA's 2000 methodology for deriving human health water quality criteria and supercede criteria for the fifteen affected pollutants and inclusion of newly published aquatic life ambient water quality criteria for two non-priority pollutants. A number of the Maximum Contaminant Levels (MCLs) associated with the Disinfection Byproducts Rule have been incorporated. Additionally, the minerals manganese and iron were removed from the non-

priority pollutant table due to issues with background concentrations associated with these two parameters. Further, the arsenic criterion for human health will now reflect only the MCL due to issues with the federally-derived 307(a) criterion in concurrence with EPA.

(2): Revision of the assessment of the bacteriological indicator for protection of recreational uses and revisions to the enterococci standard and implementation.

Section Citation and Explanation of Change

R.61-68.E.14.c.9.

Removed language that was disapproved by the EPA during the last regulation review. Also added language to allow NPDES permits to implement the change to the enterococci standard to allow a 10% exceedence of the single sample maximum value in waters not impaired for enterococci.

R.61-68.E.14.d.6.

Added language to reflect the assessment methodology for 303(d) listing used by the Department.

R.61-68.G.11.f.

Added language to reflect the addition of 10% exceedence of the single sample maximum for enterococci.

R.61-68.G.12.f.

Added language to reflect the addition of 10% exceedence of the single sample maximum for enterococci.

R.61-68.G.13.f.

Added language to reflect the addition of 10% exceedence of the single sample maximum for enterococci.

(3): Inclusion of a definition of practical quantitation limit (PQL).

Section Citation and Explanation of Change

R.61-68.B.46.

Added a definition for practical quantitation limit.

(4): Revisions to the regulatory language regarding NPDES permitting and protection of surface waters for drinking water purposes.

Section Citation and Explanation of Change

R.61-68.C.10.a.

Removed language that prohibited mixing zones in source water protection areas.

(5): Stylistic changes which may include corrections for: readability, grammar, punctuation, typography, codification, references, and language style.

Section Citation and Explanation of Change

R.61-68.D.4.a.

Changed number to 0.10 to comply with State law.

R.61-68.D.4.b.

Changed number to 0.10 to comply with State law.

R.61-68.E.14.

Moved language to heading of Appendix for clarity.

R.61-68.E.14.c.10

Changed language for clarity.

R.61-68.E.17.d

Changed language for clarity.

R.61-68.G.10.h

Changed language for clarity.

Notice of Staff Informational Forum:

Staff of the Department of Health and Environmental Control invites members of the public and regulated community to attend a staff-conducted informational forum to be held on November 27, 2007, at 1:00 p.m. in Peebles Auditorium, South Carolina Department of Health and Environmental Control, 2600 Bull Street, Columbia, South Carolina. The purpose of the forum is to answer questions, clarify issues, and receive comments from interested parties on the proposed amendments of R.61-68.

Interested parties are also provided an opportunity to submit written comments to the staff forum by writing to Amy M. Bennett at Bureau of Water, South Carolina Department of Health and Environmental Control, Bureau of Water, 2600 Bull Street, Columbia, South Carolina, 29201, Fax number (803) 898- 4140. To be considered, written comments submitted must be received no later than 5:00 p.m. on November 26, 2007.

Copies of the text of the proposed amendment to the regulation for public notice and comment may be obtained by contacting Amy M. Bennett at Bureau of Water, South Carolina Department of Health and Environmental Control, 2600 Bull Street, Columbia, South Carolina, 29201, telephone number (803) 898-4249, Fax number (803) 898-4140, or from the Department's website at <http://www.state.sc.us/dhec/eqc/>.

Comments received at the forum or during the write-in public comment period above-noticed shall be submitted to the Board of Health and Environmental Control in a Summary of Public Comments and Department Responses for consideration at the public hearing as noticed below.

Notice of Public Hearing and Opportunity for Public Comment Pursuant to S.C. Code Sections 1-23-110 and 1-23-111:

Interested members of the public and regulated community are invited to make oral and written comments on the proposed amendments of R. 61-68 at a public hearing to be conducted by the Board of Health and Environmental Control at its regularly-scheduled meeting on January 10, 2008. The public hearing will be held in Room 3420 (Board Room) of the Commissioner's Suite, Third Floor,

Aycock Building of the Department of Health and Environmental Control, 2600 Bull Street, Columbia, South Carolina. Please use the front entrance to the building facing Bull Street. The Board meeting commences at 10:00 a.m. at which time the Board will consider items on its agenda in order presented. The order of presentation for public hearings will be noticed in the Board's agenda to be published by the Department 24 hours in advance of the meeting. Persons desiring to make oral comments at the hearing are asked to limit their statements to five minutes and, as a courtesy, are asked to provide written comments of their presentation for the record.

Interested parties are also provided an opportunity to submit written comments on the proposed amendment to the regulation by writing to Amy M. Bennett at the Bureau of Water, South Carolina Department of Health and Environmental Control, 2600 Bull Street, Columbia, South Carolina, 29201. To be considered, written comments submitted must be received no later than 5:00 pm on November 26, 2007. Comments received shall be submitted in a Summary of Public Comments and Department Responses for the Board's consideration at the public hearing as noticed above.

Copies of the final proposed regulation for public hearing may be obtained by contacting Amy M. Bennett at Bureau of Water, South Carolina Department of Health and Environmental Control, 2600 Bull Street, Columbia, South Carolina, 29201, telephone number (803) 898-4249, Fax number (803) 898-4140, or from the Department's website at <http://www.state.sc.us/dhec/eqc/>.

Preliminary Fiscal Impact Statement:

No costs to the State or significant cost to its political subdivisions as a whole should be incurred by these amendments. See Statement of Need and Reasonableness below.

Statement of Need and Reasonableness:

The Statement of Need and Reasonableness is submitted as Attachment A and is omitted here to conserve space in the agenda item.

Statement of Rationale:

The Statement of Rationale is submitted as Attachment A and is omitted here to conserve space in the agenda item.

Text of Proposed Amendment for Public Notice and Comment:

The Text of the Proposed Amendment for Public Notice and Comment is submitted as Attachment C and is omitted here to conserve space in the agenda item.

ATTACHMENT E

State Register Notice of Drafting

Published January 26, 2007

DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

CHAPTER 61

Statutory Authority: S.C. Code Section 48-1-10 et seq.

Notice of Drafting:

The South Carolina Department of Health and Environmental Control (Department) proposes to amend specific sections of R.61-68, Water Classifications and Standards, and sections of R. 61-69, Classified Waters. Interested persons are invited to submit their views and recommendations in writing to Amy M. Bennett, Standards Coordinator, Bureau of Water, 2600 Bull Street, Columbia, South Carolina 29201, or by email at bennetam@dhec.sc.gov. To be considered, written comments must be received no later than 5:00 p.m. on February 26, 2007.

Synopsis:

Section 303(c)(2)(B) of the Federal Clean Water Act (CWA) requires that South Carolina's water quality standards be reviewed and revised, where necessary, at least every three years for the purposes of considering the Environmental Protection Agency's (EPA) most recent numeric and narrative criteria and to comply with recent Federal regulatory revisions and recommendations. The Department has prepared this notice of drafting to begin the required triennial review process. In order to comply with this Federal requirement, the Department will need to make specific revisions to the existing water quality standards regulation. Some of the topics that the Department is proposing to consider during this review may include, but not be limited to, the following:

- Review and, where appropriate, adoption of revised Federal water quality criteria to reflect the most current final published criteria according to Sections 304(a) and 307(a) of the CWA.

- Review and, where appropriate, revise the assessment of the bacteriological indicator for protection of recreational uses.

- Addition or revision of definitions.

- Review and, where appropriate, adopt a site-specific dissolved oxygen standard for portions of the Savannah River.

- Review the underlying scientific basis for human health protection related to the arsenic criteria and, if appropriate, revise the arsenic criteria.

- Stylistic changes which may include corrections for: readability, grammar, punctuation, typography, codification, references, and language style.

Legislative review will be required.

ATTACHMENT F

State Register Notice of Drafting

Published May 25, 2007

DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

CHAPTER 61

Statutory Authority: S.C. Code Section 48-1-10 et seq.

Notice of Drafting:

The South Carolina Department of Health and Environmental Control (Department) proposes to amend specific sections of R.61-68, Water Classifications and Standards, and sections of R. 61-69, Classified Waters. The purpose of this notice is to extend the drafting period previously established by the January 26, 2007, drafting notice published in Volume 31, Issue No. 1 of the *South Carolina State Register*. All previous comments, as well as any additional comments received after this publishing, will be considered. Interested persons are invited to submit their views and recommendations in writing to Amy M. Bennett, Standards Coordinator, Bureau of Water, 2600 Bull Street, Columbia, South Carolina 29201, or by email at bennetam@dhec.sc.gov. To be considered, written comments must be received no later than 5:00 p.m. on June 25, 2007.

Synopsis:

Section 303(c)(2)(B) of the Federal Clean Water Act (CWA) requires that South Carolina's water quality standards be reviewed and revised, where necessary, at least every three years for the purposes of considering the Environmental Protection Agency's (EPA) most recent numeric and narrative criteria and to comply with recent Federal regulatory revisions and recommendations. This process is generally referred to as the triennial review. The Department is currently reviewing the water quality standards as part of this triennial review process. Some of the topics that the Department had previously identified for consideration in the above-referenced notice included the following:

- Review and, where appropriate, adoption of revised Federal water quality criteria to reflect the most current final published criteria according to Sections 304(a) and 307(a) of the CWA.
- Review and, where appropriate, revise the assessment of the bacteriological indicator for protection of recreational uses.
- Addition or revision of definitions.
- Review and, where appropriate, adopt a site-specific dissolved oxygen standard for portions of the Savannah River.
- Review the underlying scientific basis for human health protection related to the arsenic criteria and, if appropriate, revise the arsenic criteria.
- Stylistic changes which may include corrections for: readability, grammar, punctuation, typography, codification, references, and language style.

In addition to these topics, the Department will review and, where appropriate, make changes to clarify and revise the regulatory language regarding NPDES permitting and protection of surface

waters for drinking water purposes. Revisions will address issues regarding the implementation of human health standards and mixing zone restrictions.

Legislative review will be required.

ATTACHMENT G
Summary of Stakeholder Comments Received and Departmental Responses

To date, two documents have been compiled summarizing the comments the Department has received on the proposed revisions to R. 61-68, *Water Classifications and Standards*. Both documents are provided in this attachment. They have been organized, where possible according to the organization that submitted the comments. When multiple stakeholders submitted similar comments, they were addressed as one. All comments have been summarized to conserve space in this Board Agenda Item.

I. Comments Received and Departmental Responses Following the Publication of the January 26, 2007 Notice of Drafting.

1. Revisiting the Arsenic Criteria for consumption of water and organism and organism only.

Commenters included: Santee Cooper, Duke Energy, SC Chamber of Commerce and SCANA.

Many comments were received recommending that the Department address this issue. Some comments included technical information explaining why South Carolina should revise the arsenic standard for Human Health, but maintain the MCL of 10 ug/l.

Response: The Department is reviewing the arsenic human health criterion and the underlying scientific basis for the federally published numeric recommendations by the U.S. Environmental Protection Agency (EPA) under the Clean Water Act. The EPA has published its intention, and our current water quality standards include a footnote to this effect, of reevaluating the basis for the water and organism and organism only arsenic criteria. The Department is proposing to remove of the water and organism and organism only numeric values while retaining the drinking water MCL until such time as the EPA has completed its review of the scientific basis and publishes an appropriate protective water and organism and organism only criteria.

2. Review and, where appropriate, adopt the revised Federal Water Quality Criteria to reflect the most current final published criteria put out by the EPA.

Commenters included: Savannah River Site, SC Chamber and SC Water Quality Association

Several comments were received recommending that the Department address this issue. However the Department was asked to review the scientific basis for the proposed criteria before adopting them “at face value.”

Response: The proposed changes to R.61-68 relating to human health and aquatic life criteria are reasonable because the stated criteria in the amendment are based on sound scientific principles and are required in order to comply with the goals of Section 101(a)(2) and 303(c) of the CWA for protection and maintenance of the uses of the waters of the State. These proposed changes include incorporation of the revised recommended water quality criteria for 15 pollutants published in the Federal Register on 12/31/2003. These revised criteria are based on EPA’s 2000 methodology for deriving human health water quality criteria. The Department also proposes to add the new non-priority pollutant criteria for Diazinon and Nonlyphenol to the standards. The commenters are asked to submit any additional data or studies they would like the Department to review related to these proposed standards

3. Site Specific DO Standard for portions of the Savannah River/Harbor.

Commenters: SC Water Quality Association, SC Manufactures Alliance

Comments were received recommending that the Department address this issue. The Department is asked to “proactively seek to address impaired waters ahead of TMDL development” and cautioned that a “new dissolved oxygen standards will directly impact loading on the Savannah River.”

Response: This issue is still being addressed through internal meetings with the EPA, the Georgia Department of Environmental Protection and through the stakeholder process with dischargers to the Savannah River.

4. Review and, if appropriate, revise the assessment of the bacteriological indicator for Protection of Recreational Uses

Commenter: SC Water Quality Association,

One comment was received recommending that the Department address this issue. The commenter asks that the Department move away from using a single sample value to assess whether recreational waters are meeting recreational standards.

Response: The present water quality standards for Enterococci for wastewater dischargers in Class SA, SB and SFH waters allow for the use of a daily maximum limit in place of a single sample maximum value. With regard to the assessment of recreational waters, we are continuing to evaluate whether the suggested recommendation would be appropriate.

Catawba River TMDL Coalition:

1. Asks the Department to revisit the numeric nutrient criteria for lakes that were adopted in 2001, and revise in a manner that reflects localized conditions and protects designated uses.

Response: As the commenter noted, just prior to the 2001 triennial review of the water quality standards, the EPA published a methodology for States to utilize in development of numeric nutrient criteria. The Department reviewed EPA’s recommendations and then modified the federal approach and utilized only data collected locally on our State’s reservoirs for the development of the current numeric nutrient criteria for lakes. These existing water quality standards reflect localized conditions and while they may be significantly less stringent than any numeric criteria would be if developed based solely on the national database and following strictly to the EPA guidelines without modification, they are still protective of the designated uses. While the development of numeric nutrient criteria for other waters of the State is still ongoing, we are not yet ready to promulgate any specific values at this time.

2. Asks that the Department defer developing numeric nutrient criteria for other types of waterbodies until it has established scientifically defensible methods and data protective of specific designated uses. Two technical documents were included with their response.

Response: The Department appreciates this comment and agrees that scientific defensible

methods and data protective of designated uses should be utilized in the development of numeric nutrient criteria for all waterbodies. The Department will review the technical documents provided by the commenter as numeric nutrient criteria are developed.

SC Water Quality Association:

1. Asks the Department to revise the provision calling for five consecutive fecal coliform samples in a 30-day period to a minimum of five samples during a 30-day period.

Response: This language has been in the Standards since 1971 and the Department finds that the current language is protective of water quality. The Department is still evaluating if a change to this language will be less protective of water quality. Please provide more information on why this change is requested.

2. Asks the Department to clarify the Enterococcus standard so that only the geometric mean will be used for NPDES permitting and water quality assessment purposes while the geometric mean and upper percentile values will be used for beach management decisions.

Response: Federal permitting regulations (40 CFR 122.45.d) require that NPDES discharge limitations include a daily maximum limit for all discharges other than publicly owned treatment works (POTW's), and an average weekly limit for POTW's. In addition, the current water quality standards call for calculated monthly average and daily maximum limitations for bacteriological pollutants. The procedures outlined in the Technical Support Document for Water Quality Based Toxics Control (EPA/505/2-90-001) would be used to establish the appropriate daily maximum or weekly average limits in the absence of a specified daily maximum water quality standard. In evaluating this commenter's recommendation, the Department has reviewed several existing permits and found that in most cases, a more stringent permit limit would result if we removed the language as the commenter proposes. Since the current language contained in the water quality standards is protective of human health while not being overly burdensome to the regulated community, we are continuing to evaluate whether the suggested recommendation would be appropriate.

3. Asks that section E.14(c)(8) be modified to say, "no more than ten percent of the monthly samples can exceed 43 mpn." Currently 43 mpn is a daily maximum number for calculation permit effluent limitations.

Response: The Department interprets this section to allow "no more than 10 % of the monthly samples to exceed 43mpn," subject to antibacksliding and antidegradation review.

4. Asks that the Department clarify the flexibility to use flow-based and other permitting strategies that better reflect actual discharge conditions rather than assumed worst-case scenarios. Recommends use of lowest average daily flow in receiving stream for saltwater dischargers and/or actual flow in receiving stream for stormwater discharges.

Response: The Department does use critical flow conditions to approximate magnitude, duration, and frequency for permit conditions. The critical flow condition is not a "worst case scenario," but a design basis developed for use with the acute and chronic criterion. Use of the average daily flow for saltwater dischargers is not protective of the acute water quality criteria. The Department already is using the flexibility in the standards to utilize flows other than 7Q10 on a case-by-case basis.

5. Asks that the Department establish a “safe harbor” for expansions of public facilities that have (1) gone through Council of Government review and approval and (2) would not increase pollutants by more than 25 percent of the remaining assimilative capacity of the stream in question.

Response: Please describe what is meant by “safe harbor” in this context. Item 2 does not take antidegradation into consideration. Allowing an increase would have to be evaluated under those provisions for each discharge.

6. Ask that the Department clarify that the 0.1 rule only applies when a stream actually experiences low DO.

Response: There is a contested case before the SC Supreme Court that will have implications related to this question. Response is deferred.

7. Asks that some reasonable limitation should be put on ambient biological testing required from regulated entities.

Response: The commenter cites Section E.15 of the standards. This section of the standards does not actually use the word “ambient”. The Department requires ambient biological testing of NPDES dischargers on a limited basis, so we are seeking clarification of the issue from the commenter.

8. Asks that the rule that unclassified waters take on classification of down stream waters be modified such that discharges to unclassified waters should not interfere with downstream-designated uses and criteria.

Response: The Department would like more information on the particular concerns of the commenter. Unnamed waters are still waters of the state and their uses must be protected.

9. Recommends that Section E. 14 be revised to be consistent with language in E.14 (5) concerning EPA criteria.

Response: The Department is reviewing this section of the standards to determine if it needs to be clarified. The Department is also conferring with the EPA on the implications of making a change to this section of the standards. The intent of the sentence in question is to indicate that the entire published criterion is adopted into the standards, not just the numeric criterion.

10. Asks the Department to consider additional water classifications such as “swamp water” and “urban streams.”

Response: These waters are currently classified. The commenter is asked to provide data that documents the need for these new classifications.

11. Recommends a change to the language concerning alternative WET testing species or methodology.

Response: The EPA must approve any alternate WET testing species or methodology. The NPDES permitting process also addresses this issue.

12. Recommends that the ONRW section that specified that no new or increased sources of pollution are allowed be refined to require no measurable change in water quality.

Response: State water quality standards must be consistent with specific Federal statutory and regulatory requirements in order for the EPA to authorize their use for water programs in that State. Consistent with the Federal regulation at 40 CFR 131.12(a)(3) with regard to antidegradation and the protection of nationally significant ecological water resources of the State, ONRW waters are our most protected waters and degradation of any existing water quality is not allowed. Our current state water quality regulation protects these unique waters and is consistent with Federal requirements

Duke Energy

1. Comments that the Source Water Assessment and Protection Program has not been promulgated in compliance with the APA, and therefore should not be used to impose NPDES permit limits/conditions.

Response: The Department will soon be issuing a new Notice of Drafting that will address Source Water Protection clarifications to the existing regulation language.

2. Asks for clarification that a NPDES permit applicant can perform a mixing study as a means of establishing an NPDES limit(s) for discharges to lakes.

Response: This is currently allowed in the standards. Please indicate what needs to be clarified in the standards.

3. Comments that non-contact cooling water should not be subject to the water quality standards for toxic pollutants (with the exception of biocides and temperature).

Response: A discharge of water where the pollutant concentration has been changed must adhere to the water quality standards in order to be protective of water quality.

Summerville CPW - Mr. Charles Cuzzel

1. Requests a new Classification and Standard be developed for the upper Ashley River. Comments that the standards do not include an appropriate category for coastal rivers that are heavily influence by freshwater swamps. Suggests as an initial step that the upper portion of the Ashley be reclassified from SA to SB.

Response: The commenter is asked to submit data to support this change. The Department will review the reclass request and supporting documentation.

Progress Energy

1. Asks that the water quality numeric criteria for the protection of aquatic life for copper be modified using the biotic ligand model (BLM) as recommended in the 2007 copper criteria revision.

Response: The biotic ligand model can currently be utilized as a scientifically defensible method for determining effluent limits. The Department proposes to clarify that the BLM can be used by adding a footnote to the freshwater aquatic life criteria for copper.

Western Carolina Regional Sewer Authority

1. Submitted copper data to be considered for removing a portion of the Reedy River from the 303(d) list of impaired waters.

Response: Data was forwarded to the 303(d) coordinator for consideration.

The Beaufort Group – Mr. Bob Gross

1. States that it seems that reclaimed water, which has a very high treatment standard should be allowed to be discharged into ORW waters. Alternatively, the discharge of stormwater from any developed area should be banned to ORW waters.

Response: Stormwater is only allowed to ORW “If water quality necessary for existing and classified uses shall be maintained and protected consistent with Antidegradation Rules”. Stormwater from developed areas must demonstrate compliance with the condition quoted above before being allowed into class ORW. The Department appreciates the comment and is also concerned with maintaining the water quality of ORW.

Washington Savannah River Company (WSRC)

1. Requests that the definition of ephemeral stream be refined to enable better identification through the use of biological indicators. Suggests the Department use scientifically defensible biological data for the development of the indicators.

Response: The Department would like more clarification of the issue. Please provide suggestions as to what would refine the definition with the understanding that the Department intends to protect ephemeral streams to the same degree as other waterbodies of the State and to protect the classified uses. Implementing this suggestion may require significant resources that are not currently available within the Department.

2. Requests that the Department develop scientifically based designated uses and water quality standards for ephemeral streams and include them with R. 61-68. Until the uses and standards are included in the regulation, they ask that discharges into ephemeral stream include only monitoring and reporting requirements for all but conventional pollutants.

Response: Intermittent and ephemeral streams are waters of the State and currently have water quality standards. These water quality standards are protective and maintain the water quality for not only the ephemeral and intermittent streams, but also the downstream uses of the larger waters into which they flow. Allowing dischargers to ephemeral streams to only monitor and report for certain pollutants would not be protective of the ephemeral stream or the downstream uses of the larger waters into which they flow.

3. Asks that the standards for iron and manganese be removed from R. 61-68. The commenter states that both manganese and iron are naturally occurring, often at concentrations above the standard.

Response: Manganese and iron are non-priority pollutants and the Department is reviewing the scientific basis for these standards and considering this request.

4. Asks the Department to remove the nitrate human health value of 10 mg/l from the water and organism consumption column of the standards and return it to the MCL column.

Response: The change requested by the commenter would not change NPDES permit limits for nitrates due to the existing MCL value in place. Please provide more information on why this change is requested.

5. Asks that language be changed/added such that site specific water quality standards that are developed for perennial streams automatically be applied to all ephemeral and intermittent streams that are tributary to them until such time as SCDHEC develops water quality standards for ephemeral and intermittent streams.

Response: The standards currently allow for ephemeral streams to be included in the development of site-specific standards as long as the ephemeral stream is included in the scope of the site-specific study. The site-specific standard cannot include areas that are outside the scope of the study.

6. Consider the information available for updating the copper criteria utilizing the Biotic Ligand Model as opposed to the hardness-dependent criteria.

Response: See response to Progress Energy.

SC Department of Natural Resources

1. Recommends an addition to Section E.17 stating, “spatial distribution of samples in all surface waters shall include surface, mid-depth, and bottom water samples that are representative of conditions throughout the water column.”

Response: Section E.17 (a) states that “surface and ground water samples shall be collected so as to permit a realistic appraisal of quality and actual or potential damage to existing or classified water uses.” This section further states, “For surface waters, time of day, flow, surface area and depth shall be considered.” The Department currently utilizes its resources to assess different habitats as each situation warrants. The Department can profile individual monitoring locations based on the need for such data. This suggested change to the standards would require significant resources that are not currently available within the Department.

2. Recommends clarification of the dissolved oxygen standard as it applies to lakes and reservoirs. Recommends that the definitions of “surface” water in lakes and reservoirs include the entire surface layer of water (epilimnion).

Response: This appears to be more of a monitoring issue than a standards issue. The comment will be referred to the Monitoring Committee.

3. Recommends several surface waters be changed from the FW classification to the ORW classification due to the presence of high quality habitat and/or diverse aquatic fauna.

Response: The Department requests data to support these classification changes.

4. Also recommends that Back Swamp and Obed Creek be added to the Water Classifications with the proposed classification of ORW.

Response: The Department requests data to support these classification changes.

SC Chamber of Commerce

1. Requests that the definition of ephemeral stream be refined to enable better identification through the use of biological indicators. Suggests the Department use scientifically defensible biological data for the development of the indicators.
2. Requests that the Department develop scientifically-based designated uses and water quality standards for ephemeral streams and include them with R. 61-68. Until the uses and standards are included in the regulation, they ask that discharges into ephemeral stream include only monitor and report requirements for all but conventional pollutants.
3. Consider the information available for updating the copper criteria utilizing the Biotic Ligand Model as opposed to the hardness-dependent criteria.

Response: See responses to WSRC comments.

SCANA

1. Provided information on the areas of the regulation that relate to source water protection and implementation. Requests that source water protection reference in Section E.14.c (5) of the regulation be deleted unless and until a comprehensive regulation for source water protection, developed in a manner consistent with the SC Administrative Procedures Act, is written.

Response: The Department will soon be issuing a new Notice of Drafting that will address Source Water Protection clarifications to the existing regulation language.

2. States that the language in Section D.2.b was “mistakenly” changed in 2001 from “economically and technologically reasonable” to “economically or technologically reasonable.” Request that the language be changed back to its original intent.

Response: The Department reviewed this comment and finds the language is correct as it is currently written. The current language is what was proposed to the DHEC Board on 12/14/2000 and reflects the Department’s intent for each section of the standard.

3. Makes recommendations to language in R 61-9 (Water Pollution Control Permits) that should be included in R.61-68 concerning instream dilution.

Response: The Department notes the receipt of this comment and if a change is warranted it may be more appropriate to do so in R. 61-9.

SC Manufacturers Alliance:

1. Requests that the definition of ephemeral stream be refined to enable better identification through the use of biological indicators. Suggests the Department use scientifically defensible biological data for the development of the indicators.

Response: See response to WSRC.

2. Requests that the Department develop scientifically based designated uses and water quality standards for ephemeral streams and include them with R. 61-68. Until the uses and standards are included in the regulation, they ask that discharges into ephemeral stream include only monitor and report requirements for all but conventional pollutants.

Response: See response to WSRC.

3. States that source water protection standard provisions are being revised by the Department and that SCMA would like to see a reasonable definition of source water protection area.

Response: See response to SCANA.

4. Asks the Department to reconsider the working of Section E.14.c (5) and how it determines reasonable potential to impact a drinking source.

Response: The Department will soon be issuing a new Notice of Drafting that will address Source Water Protection clarifications to the existing regulation language.

NOAA – Mr. Prescott Brownell

1. Provides technical information on the work of the NOAA Fisheries Service on the restoration of diadromous fishery resources in South Carolina. States that an issue to be addressed is dissolved oxygen for sensitive life stages of diadromous fishes, especially shortnosed sturgeon. States that dissolved oxygen levels for survival, protection and recovery of shortnose sturgeon should be kept at or above 5 mg/l in any waters potentially harboring this species, and that many river reaches at and above estuarine waters fall below 4 mg/l.

Response: The Department would like additional information on what specific river reaches to which the commenter is referring.

II. Comments Received and Departmental Responses Following the Publication of the May 25, 2007 Notice of Drafting

South Carolina Water Quality Association (WQA): Comment letter listed four priority issues twelve secondary issues.

Priority Issues:

1. Asks the Department to revise the enterococci standard so that only the geometric mean, rather than the SSM, will be used for NPDES permitting where a discharger collects five samples a month (the single sample/daily maximum should apply where fewer than five samples are collected). Another option proposed was for the monthly geometric mean to apply as well as a weekly geometric mean set at the SSM value and where fewer than five samples are collected in a month, the single sample value will apply as a daily maximum limit.

Response: The SSM value adds an important level of protection against those one-time exceedences that could potentially be hazardous to human health. The geometric mean does not

provide the same protection against these one-time events because of the ability for these one-time exceedences to be averaged. Thus, the Department believes that it is critical to provide some protection for these events. That being said, the Department believes that while retaining the SSM, it would be reasonable to revise the standard to make it consistent with our fecal coliform standard, which allows for no more than 10% of the samples to exceed the SSM. However, it should be noted that this 10% exceedence would only apply to water bodies that are not impaired for enterococci.

2. Asks the Department to replace fecal coliform bacterial indicator with *E. coli* and to implement the *E. coli* criteria as a monthly geometric mean for NPDES purposes.

Response: The Department is aware that the 1986 Water Quality Criterion for Bacteria confirms that enterococci and *E. coli* are good indicators of pathogenic gastrointestinal organisms; however, the Department has concerns about the effect of new indicators on NPDES discharges. We are not aware of information showing that the amount of disinfection required to reduce discharges to the appropriate fecal coliform level would be adequate to reduce discharges to the appropriate *E. coli* level. If the Department were to adopt a new criterion for *E. coli*, once it is adopted, it must be implemented in the NPDES program. This would require the use of both indicators (fecal coliform and *E. coli*) during the transition until permit limits could be adjusted, and some coastal dischargers would also be required to analyze for a third indicator (enterococci). This would be costly to the State and discharges.

The Department had analyzed enterococci ambient water samples on select water bodies. There have been no ambient water *E. coli* samples analyzed across the state, so the Department does not have background data to assess the impacts of this requested change to the standards. Fecal coliform is still a reliable bacterial indicator and it is allowed to be utilized by states. To date, only two states (Kentucky & Tennessee) within EPA Region 4 have adopted *E. coli* standards, the remaining six states in the region have chosen keep fecal coliform in their standards as the bacteria indicator organism for fresh water. It should be noted that the states that have adopted *E. coli* are not coastal states, and therefore are not affected by the implementation challenges faced by coastal states in the implementation of multiple bacterial indicators.

The Department is also aware of current epidemiological studies the EPA is conducting that may result in significant changes to the recommended water quality criteria for bacteria. The Department finds that it is prudent to await the outcome of these epidemiological studies before making changes to the current bacteria standard.

3. States that the WQA supports the Department's decision to include a footnote to clarify the BLM may be used, at the discharger's election, for determining copper effluent limits.

Response: The Department appreciates the support of the WQA on this issue.

4. Asks that the Department clarify that the 0.1 rule only applies when a stream actually experiences low DO.

Response: There is a contested case before the SC Supreme Court that will have implications related to this question. As discussed with the representatives of the SCWQA on 7/25/07, this is more of a statutory issue that cannot be resolved at the regulatory development level.

Secondary Issues:

1. States that the WQA supports the Department's decision to move away from using a single sample value to assess whether recreational waters are meeting recreational standards. Asks that the Department to clarify that where more than one sample is available in a given month for the water in question, that the geometric mean applies and that the single sample value/daily maximum will apply during any month where only one sample is taken in order to avoid impaired waters decisions based only on one sample.

Response: EPA guidance on this issue clearly distinguishes between the enterococci standard for NPDES purposes and for the assessment of enterococci for purposes of making Section 303(d) listing determinations. EPA states that while the SSM value is required for making beach notification and closure decisions, for 303(d) listing purposes, the geometric mean is generally more relevant than the SSM because it is usually a more reliable measure of long-term water quality. Thus, the Department intends to clarify that for 303(d) purposes, the geometric mean will be used and will allow for no more than 10% of the samples to exceed the SSM.

2. The WQA supports the Department's proposal to evaluate a site-specific DO standard for the Savannah River. Further states that any revision to WQS should be accompanied by a fair allocation of BOD loadings between SC and GA.

Response: The Department appreciates the support of the WQA on this issue. The triennial review of the water quality standards does not address loading allocation, but the Department appreciates the WQA comment and support on allocation issues in the Savannah River.

3. Asks the Department to revise the provision calling for five consecutive fecal coliform samples in a 30-day period to a minimum of five samples during a 30-day period.

Response: The Department implements the five consecutive sample requirements only in permits where the NPDES discharger requests (and subject to anti backsliding rules is eligible for) the application of the standard for calculating fecal coliform limits. The Department has to date, applied this condition in two NPDES permits. In these permits the dischargers are required to report the number of time the geometric mean of any five consecutive samples taken during the monitoring period exceeds 200/100 ml. This permit monitoring requirement covers the entire 30-day period.

This condition allows for an extra level of protection in cases where the permittee is allowed to exceed the 400/100 ml standard up to ten percent of the total samples during a 30 day period as allowed in the standard. A brief search (non-inclusive) found that North Carolina and Pennsylvania also has this requirement in their standards.

Further, fecal coliform is one of the most common water quality impairments. In the 2006 303(d) list of impaired waters, over a third of the stations were listed as impaired for fecal coliform. Thus, the Department does not support a revision to the standard that might be less protective of human health.

4. Asks that section E.14(c)(8) be modified to say, "no more than ten percent of the monthly samples can exceed 43 mpn." Currently 43 mpn is a daily maximum number for calculation permit effluent limitations. States that the WQA will be satisfied with the Department's earlier response provided the Department coordinates with the permit writers so that there is not an inconsistent interpretation.

Response: As the Department stated in its earlier response, the Department interprets this section to allow “no more than 10 % of the monthly samples to exceed 43mpn,” subject to antibacksliding and antidegradation review. Making this change to implementation language may cause more confusion being that most permittees subject to this requirement are consistently complying with the current implementation language and are not eligible for the ten percent exceedence language due to antibacksliding rules. The review processes implemented within the NPDES permit program strive for consistent interpretation of the standards.

5. Asks that the Department clarify the flexibility to use flow-based and other permitting strategies that better reflect actual discharge conditions rather than assumed worst-case scenarios. Recommends use of lowest average daily flow in receiving stream for saltwater dischargers and/or actual flow in receiving stream for stormwater discharges. Commenter discusses a tidal flow area and the acute whole effluent toxicity tests. Asks that the Department’s flexibility be made clearer in the regulation.

Response: “The Criteria Maximum Concentration (CMC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect.” Our current permitting approach is to use, the criteria documents and EPA’s document entitled, “Technical Support Document for Water Quality-based Toxics Control”(TSD), which represent the best science on implementing toxics control. In the TSD, a one-hour averaging period reflects the basis for evaluating acute toxicity.

In section 2.3.5, EPA says, “...EPA derives its criteria intending that a single marginal criteria excursion (i.e., a slight excursion over a 1-hour period for acute ...) would result in little or no ecological effect and require little or no time for recovery.” This principle is consistent with EPA’s document entitled, “Guidelines for Deriving Numerical national Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses.”

The timeframe for the completion of an acute toxicity test (48 hours) is not a basis for establishing a critical low flow condition in a tidal situation that would be protective of acute impacts from the discharge.

The location of the discharge also plays a critical role in the assessment of dilution. The tidal cycle does not automatically mean that “clean” receiving water is available under each tide. In cases where the discharge is located away from the main body of water (e.g. on a small tidal creek or marsh) there may be movement of the effluent but not a significant reduction in the concentration at the point of the discharge. As stated in the earlier response, the Department already is using the flexibility in the standards to utilize flows other than 7Q10 on a case-by-case basis. We have offered permittees the option of conducting analysis of their location to determine the appropriate dilution.

6. Asks that the Department establish a “safe harbor” for expansions of public facilities that have (1) gone through Council of Government review and approval and (2) would not increase pollutants by more than 25 percent of the remaining assimilative capacity of the stream in question.

Response: If the Department reserved twenty-five (25%) of the available assimilative capacity of the receiving stream to provide for a “Safe Harbor” application for domestic facilities, this would result in a more stringent set of limitations (initially) since we presently do not “reserve” assimilative capacity beyond the current 208 Water Quality Management Plan flow projections for the current users. We would typically allocate the entire loading that is available either for conservative pollutants (e.g. BOD and NH3) or toxics (e.g. metals, chlorine) subject to the

limitations of specific guidelines or standards (e.g., for domestics, secondary treatment on conventional pollutants). The commenter appears to have an incorrect assumption that there is typically “reserve” assimilative capacity beyond the current permitting capacity.

7. Recommends that Section E. 14 be revised to be consistent with language in E.14 (5) concerning EPA criteria and asks for clarification of the previous response.

Response: For further clarification of the language contained in E.14, the Department's intent is to include all relevant scientific analysis that is included in the water quality criterion documents. All water quality standards (which are more than just the numeric criteria) and their implementation and assessment must be based on sound scientific methods and data and information. While not commonly known, the criterion documents include many important and valuable data and information regarding how toxicity effects were determined and this includes such items as speciation, duration and frequency determinations for specific aquatic flora and fauna, etc. This is the reason why the entire document is adopted so that the Department may correctly implement and assess the criterion in the environment.

8. Asks the Department to implement a use attainability process that will be used in advance of 303(d) listings and TMDL development to address waters (such as swamps) that naturally do not meet their assigned water quality standards.

Response: The current water quality standards permit the implementation of a use attainability analysis. However, the amount of evidence and documentation necessary to support any redesignations is extensive. The process would necessarily require the input of local stakeholders who would have an interest in any changes to water quality classifications within their watersheds. Thus, the process would best be implemented on a case-by-case basis. The Department would be willing review the reclass request and supporting documentation.

9. Recommends a change to the language concerning alternative WET testing species or methodology. Comments that alternate copper testing methods are treated differently than alternate WET testing methods. Asks for clarification of the previous response.

Response: As required by the Clean Water Act (CWA) and Safe Drinking Water Act (SDWA), the U.S. Environmental Protection Agency (EPA) promulgates guidelines establishing test procedures (analytical methods) for data gathering and compliance monitoring under National Pollution Discharge Elimination System (NPDES) permits and national primary drinking water regulations (NPDWRs). These test procedures are approved at 40 *Code of Federal Regulations* (CFR) part 136 for wastewater and 40 CFR part 141 for drinking water. In addition, the guidelines at 40 CFR 136.4 and 136.5 and 40 CFR 141.27, allow entities to apply for Agency permission to use an alternate test procedure (ATP) in place of an approved method. These guidelines are the basis for the Agency's alternate test procedure (ATP) program for water methods that is administered by the Office of Water, Office of Science and Technology, Analytical Methods Staff (AMS).

The use of an alternate test species for WET testing must be approved by the EPA before it can be incorporated into an NPDES permit. If an alternative test method for copper is proposed by a permittee, it must also be approved by the EPA. The comment concerning copper testing methods indicates that the commenter appears to be confusing testing methods with the Department's ability to consider other scientifically defensible published data in the development of permit limits.

Once an ATP is approved, the EPA has a process that allows for public comment. The Department's previous comment "the NPDES permitting process also addresses this issue" was intended to indicate NPDES permit process allows for public comment on any ATP included in the permit. This language is included in the Standards because the ATP must be approved by the EPA. The change suggested by the commenter would contravene Federal regulations.

This issue was discussed at the last stakeholder meeting and the suggested changes to clarify the language have been proposed in the regulation. The change to the language still indicates that the EPA must approve any change to the methods in 40 CFR 136.4 and 136.5.

10. Recommends that the ONRW section that specified that no new or increased sources of pollution are allowed be refined to require no measurable change in water quality.

Response: The Department previously responded that State water quality standards must be consistent with specific Federal statutory and regulatory requirements in order for the EPA to authorize their use for water programs in that State. Consistent with the Federal regulation at 40 CFR 131.12(a)(3) with regard to antidegradation and the protection of nationally significant ecological water resources of the State, ONRW waters are our most protected waters and degradation of any existing water quality is not allowed. Our current state water quality regulation protects these unique waters and is consistent with Federal requirements.

The only waters currently designated as ONRW are within the Congaree National Park. The Department adhered to the requirements of the administrative procedures act when these waters were reclassified to ONRW based on the wording in the current standards. The current wording does allow for discharges from waste treatment facilities in waters upstream or tributary to ONRW if there will be no measurable impact on the downstream ONRW consistent with Antidegradation Rules. The example given by the commenter concerning consolidation of three existing facilities that would result in 50 percent lower pollution loadings would be allowed for dischargers upstream or tributary to the ONRW. There currently are no NPDES discharges within the boundary of Congaree National Park and it is true that the current regulation prohibits future discharges within the park boundary.

11. States that the WQA supports the request to reclassify the upper Ashley River from SA to SB.

Response: In the previous response the Department asks that the commenter submit data to support this change. The Department will review the reclass request and supporting documentation. The Department finds it appropriate for reclassification of water bodies to take place through a separate stakeholder process. This reclassification requests must involve local stakeholders in the Upper Ashley area.

South Carolina Manufactures Alliance (SCMA) - Comments were submitted in two separate letters.

1. The SCMA believes it is appropriate that modifications to those portions of the Source Water Protection Plan that are used to impose limitation in NPDES permits should be subjected to the formal regulatory development process. The aspects that they find merit critical review are 1) Application of the source water protection area determined by high flow conditions (TOT10) to the regulation of continuous NPDES discharges; 2) The calculation of permit limits using drought flow conditions (7Q10) at the upstream boundary of the source water protection area; 3) Using the same highly

conservative assumptions to determine reasonable potential. Commenter states that these three aspects, taken together, result in burdensome requirements on discharges without really providing any additional protection to drinking water intakes downstream.

Response: The Department has decided to defer this issue for this triennial review.

2. SCMA requests that the Department not lower the thallium standard and instead consider technical justification from one or more stakeholders that may provide the rationale for a thallium water quality standard less restrictive than the one proposed by the Department.

Response: This proposed change to the thallium standard was included in the revised recommended water quality criteria for 15 pollutants published in the Federal Register on 12/31/2003. The Department is proposing to adopt EPA's recommended criteria; however, if stakeholders can present alternate data to support the development of a scientifically valid standard, the Department would be willing to consider it.

3. SCMA asks the Department to exempt permitted entities with a history of WET testing compliance from numerical water quality standards for metals, such as copper.

Response: The Department is required to have water quality standards for metals such as copper. A revision to the standards such as the one proposed above would be prohibited by the Clean Water Act.

4. Provides in-depth input on changes to the source water protection language that had been discussed during the stakeholder process.

Response: The Department agrees that a more detailed evaluation of this issue is required. The Department has agreed to additional meetings with stakeholders to discuss this complex issue while retaining the current language in E.14.c(5).

Washington Savannah River Company, LLC

1. Commenter does not agree with the Department's previous response that existing water quality standards are appropriate for the protection of ephemeral and intermittent streams. Indicates that the Department is overly stringent calculating NPDES permit limits using zero 7Q10 flows. Suggests that permittees who discharge into ephemeral or intermittent streams to have the option of monitoring and reporting effluent parameters, while agreeing to also monitor the receiving waterbody for the same parameters.

Response: The water quality standards specify intermittent and ephemeral streams as being waters of the state. As such they are held to the same standards as other water bodies. The standards do not all for a lesser standard because a waterbody is an intermittent or ephemeral stream; however the Department would allow for a site-specific criteria to be developed on a case-by-case basis.

2. Suggests the addition of "Limits for these constituents will normally be required when they are added or used in a manufacturing process, but not when they are present due to natural conditions" to Section E.16, with the understanding that more complete language may need to be developed by the Department.

Response: The water quality standards regulation already allows the Department to establish permit effluent limitations at a level higher than the derived limit, but no higher than the natural background concentration when the naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation. This permitting flexibility is allowed as long as a discharger is neither adding nor concentrating the pollutant that is naturally occurring.

3. Comments on the proposed sourcewater protection language in E.14.c(5). States that use of TOT10 may be overly stringent. Commenter recommends that this language not be added during this triennial review so that a more detailed evaluation and development of clear and reasonable language can be completed. If added during this triennial review, suggests use of a TOT50 value.

Response: The Department agrees that a more detailed evaluation of this issue is required. The Department has agreed to additional meetings with stakeholders to discuss this complex issue while retaining the current language in E.14.c(5).

The South Carolina Chamber of Commerce

1. Asks that the Department review any new or revised EPA criteria before adopting them. Stated specific concerns about the proposed changes to the thallium standard.

Response: Please see response to item number 2 under SCMA.

2. Provides in-depth input on changes to the source water protection language that had been discussed during the stakeholder process.

Response: Please see response to item number 3 under Washington Savannah River Company.

3. Provides a discussion of instream flow dilution and makes recommendations for changes to the WQS to clarify the application of dilution flow.

Response: This is a new issue that the Department has not adequately examined due the late date of this comment letter (8/20/07). The response is deferred at this time.

Upstate Forever

1. Recommends that total suspended solids (TSS) be incorporated into the water quality standards and, at a minimum, for ONRW, ORW, Trout Natural (TN), Trout, Put, Grow, and Take (TPGT), and TPT.

Response: The Department concurs that TSS is a very useful parameter when evaluating water quality and has previously considered adopting TSS as a water quality standard. Ultimately, after careful review and consideration, the Department adopted turbidity standards, which are reported as Nephelometric Turbidity Units (NTUs), as the controlling measure. We believe the current standard is protective, but understand that the commenter has raised valid issues and will reconsider the adoption of TSS as a water quality standard during the interim between this triennial review and the next.

2. The commenter states that ONRW, ORW, TN, TPGT, and TPT do not have adequate protection under the current regulation and would like TSS standards specific to the classifications to be adopted to protect these waters.

Response: As we noted in the above response, turbidity standards are in place for each of these classes of waters. TN are particularly protective with allowing only 10 NTUs or 10% above natural conditions. For example, if a TN stream was measured at 5 NTUs, then the most that could be allowed would be 0.5 NTU difference. As to TPGT and TPT, neither of these trout water classes are protecting the reproductive nor nursery habitat uses for trout and so, we believe the 50 NTUs standard to be the correct value. As to ONRW and ORW, these waters are considered to be recreationally or ecologically exceptional as they exist and it is the intent of the water quality standards to protect the existing conditions as they were at the time of the reclass to ORW or ONRW. We do not want to alter what made them special in the first place. Water quality is very different as you travel across the State and what is the correct level of water clarity in one waterbody would not be the same value for another waterbody in a different ecosystem of the State. It would be inconsistent with the intent of protecting existing water quality to set a single value for these waters, since any value different from the existing natural background value could be measured. The water quality standards do not allow for any measurable difference in water quality. This further applies to all permitted activities.

3. The commenter states that ORW and Trout waters allow discharges and recommends that a more stringent standard be applied to stormwater and nonpoint sources for these two classes.

Response: Both of these water classifications have established standards, both numeric and narrative, that protect the existing and classified uses of these waters. Permits written in compliance with water quality standards will protect those existing uses. Further, as noted above, for ORW waters of the State, no measurable difference in existing water quality can be permitted. We believe this will ensure that ORW are protected and maintained in the condition that were existing at the time of their reclassification.

Southern Environmental Law Center (SELC)

1. States that DHEC should retain the single sample maximum values for enterococcus testing in coastal waters.

Response: Please see response to priority issue number 1 under South Carolina Water Quality Association.

2. States that DHEC should retain the five consecutive sample requirement for fecal coliform.

Response: Please see response to secondary issue number 3 under South Carolina Water Quality Association.

3. States that DHEC should continue to take steps to Develop non-fecal indicator standards.

Response: Please see response to priority issue number 2 under South Carolina Water Quality Association.

4. Commenter supports the Department's efforts to clarify regulations regarding source water protection areas.

Response: Please see response to issue number 3 under Washington Savannah River Company.

5. Commenter supports the Department's clarification of the existing dissolved oxygen regulation to make it consistent with the statutory standard of 0.10 mg/L.

Response: The Department appreciates the support of the SELC on this issue.

6. States that the Department should not alter the ONRW/ORW discharge prohibitions to allow new or expanded discharges under any circumstances.

Response: Please see response to secondary issue number 10 under South Carolina Water Quality Association.